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FIRE ENGINEERING

The Journal of the Fire Protection Profession Since 1877

Member ABC

NOVEMBER, 1943

Vol. 96, No. 11

Washington Auxiliaries Stage Demonstration (See Page 704).

A CASE - SHEPPERD - MANN PUBLICATION

"We have standardized on **EMERSON RESUSCITATORS** *after four years of experience with others"*

Hempstead Fire Department

★

IN RESUSCITATION
the shift is to
EMERSON

Hempstead Fire Department, operating near the Army's Mitchel Field and in the center of many defense plants, has made an outstanding record in life saving.

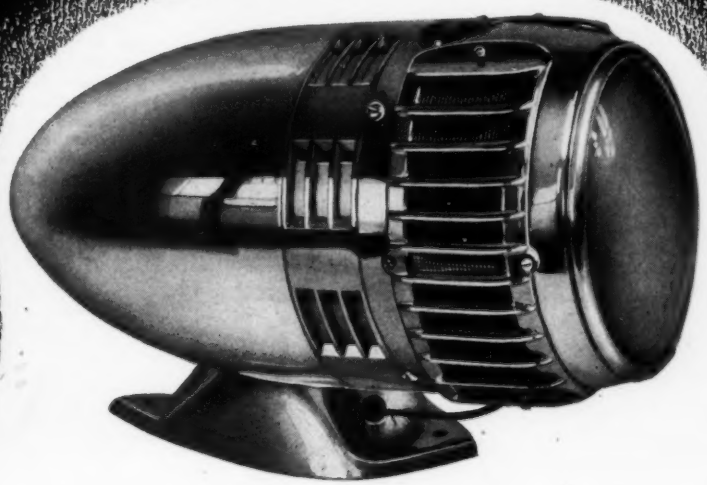
Their adoption of Emerson equipment after four years' experience with others, is typical of what is going on with fire departments throughout the country.

Investigate this outstanding resuscitator, inhalator and aspirator for the superior protection of your community.

★ **REPRESENTATIVES IN PRINCIPAL CITIES** ★

J. H. EMERSON COMPANY
CAMBRIDGE :: MASSACHUSETTS

For DEPENDABILITY and LONG SERVICE USE FEDERAL SIRENS



Over 40 years of "sound" engineering is back of every FEDERAL Siren. Each model is designed and constructed to give not only the maximum as a warning signal, but also to withstand many years of hard service—service that can be depended upon in all kinds of weather—day in and day out.

Made in a variety of models, FEDERAL Sirens give a powerful and unmistakable warning tone—sounded up and down the scale—a tone that cannot be confused with any other signal. These sirens are available with or without a flashing red light or an oscillating red light.

The FEDERAL FURY EXHAUST WHISTLE is available as a warning signal in those communities which still prohibit the use of sirens under wartime conditions. Two new models of oscillating lights are also available for additional protection by a visual warning.

WRITE FOR BULLETIN!

FEDERAL ELECTRIC CO., INC.

SIREN HEADQUARTERS

8702 So. State Street Chicago 19, Illinois

FIRE ENGINEERING

A Consolidation of Fire and Water Engineering, The Fire Engineer and Fire Protection

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FRED SHEPPERD
Editor

"Fire Chief's Handbook"

ONE of the smartest things any fire official can do these days is to stock up on the various textbooks that will help him advance most rapidly in his chosen profession.

● The following letter is typical of the enthusiasm that is being shown for these valuable handbooks we publish:

● **FIRE ENGINEERING,**
24 West 40th Street,
New York 18, N. Y.
Gentlemen:
Enclosed please find four (count 'em) one-dollar bills* for which please send the best book on the market for the dough, the "Fire Chief's Handbook".
This makes me a 100% member of your book "family" as well as for your magazine, "Fire Engineering".
Thanking you for an anticipated speedy reply, I beg to remain
Very sincerely yours,
R. E. Rohde,
c/o #18 Engine,
Oakland 1, Calif.

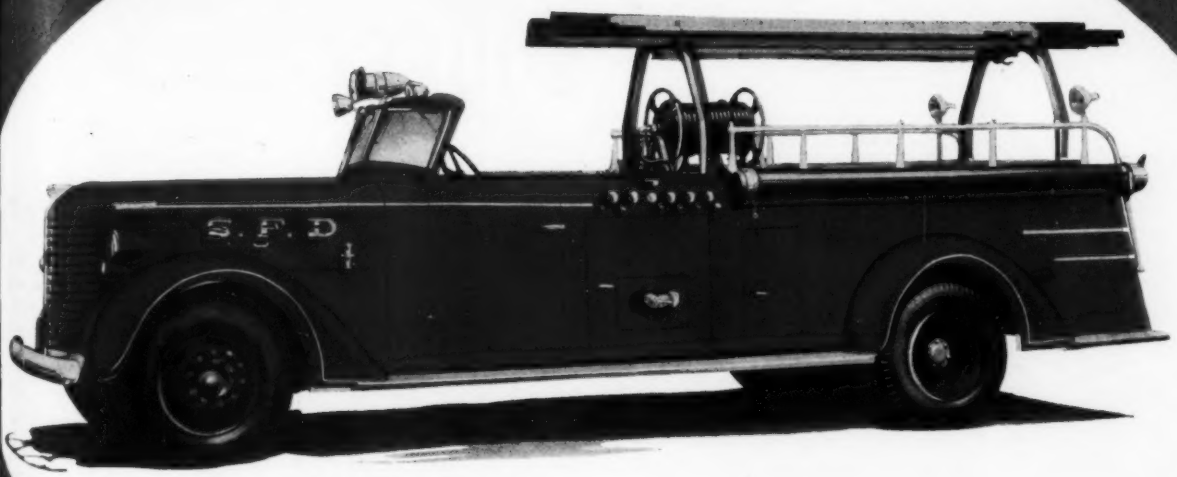
● *(Publishers' Note: If your letter isn't registered, it's safer to send check or money-order.) Besides Fred Shepperd's authoritative "Fire Chief's Handbook" ($4), you'll find on page 715 of this issue several other standard textbooks that should be in every fire library: Fire Service Hydraulics ($3), Questions and Answers for Lieutenant and Captain ($2.50); Promotional Study Course for Firemen ($3.00) and Fire Station Design (75¢); all postpaid and guaranteed.

The Publishers

FIRE ENGINEERING

The Journal of the Fire Profession since 1877; published on the fifteenth of each month by Case-Shepperd-Mann Publishing Corp., 24 West 40th St., New York 18, N. Y., also publishers of *Water Works Engineering, Sewage Works Engineering*, etc. ¶Subscription price U. S. and Latin America, $2 a year; Canada, $2.50; Foreign, $3; Single copies, 25c. ¶Member of Audit Bureau of Circulations and Associated Business Papers, Inc. ¶Entered as second-class matter April 15, 1929, at the Post Office at New York, N. Y., under Act of March 3, 1879. ¶Contents of this issue copyrighted, 1943, by Case-Shepperd-Mann Publishing Corp. ¶KARL M. MANN, President; I. HERBERT CASE, Vice-President and General Manager; FRED SHEPPERD, Secretary and Editorial Director; W. J. GIBSON, Eastern Representative; WM. H. TOPHAM, Circulation Manager. CHICAGO OFFICE: W. S. CLEVENGER and L. M. ROCHE, 6 No. Michigan Ave., Chicago 2, Ill.; SAN FRANCISCO: CHARLES H. WOOLLEY, 605 Market Street, San Francisco 5, Calif.; LOS ANGELES: AUGUST HAURIN, 6000 Miramonte Blvd., Los Angeles 1, Calif. ¶Printed in U. S. A.

A CASE-SHEPPERD-MANN PUBLICATION
"*Specialized* Leadership"



Buffalo 1250 gallon Triple as specially designed and built for Springfield, Mass.

ESSENTIAL FIRE PROTECTION IN WAR AND PEACE

★ ★ ★

BUFFALO FIRE APPLIANCE CORPORATION

BUFFALO . . . . NEW YORK

SQUEEZ-GRIP

JUST Squeeze It

—It's as Simple as That

The SQUEEZ-GRIP valve is a development so sensational, and of such great importance, that it actually changes the idea of what constitutes speed in fire fighting. It ends the delay, the waste motion of setting down an extinguisher to operate a "hand-wheel" valve.

NEW SQUEEZ-GRIP SAVES TIME AND GAS

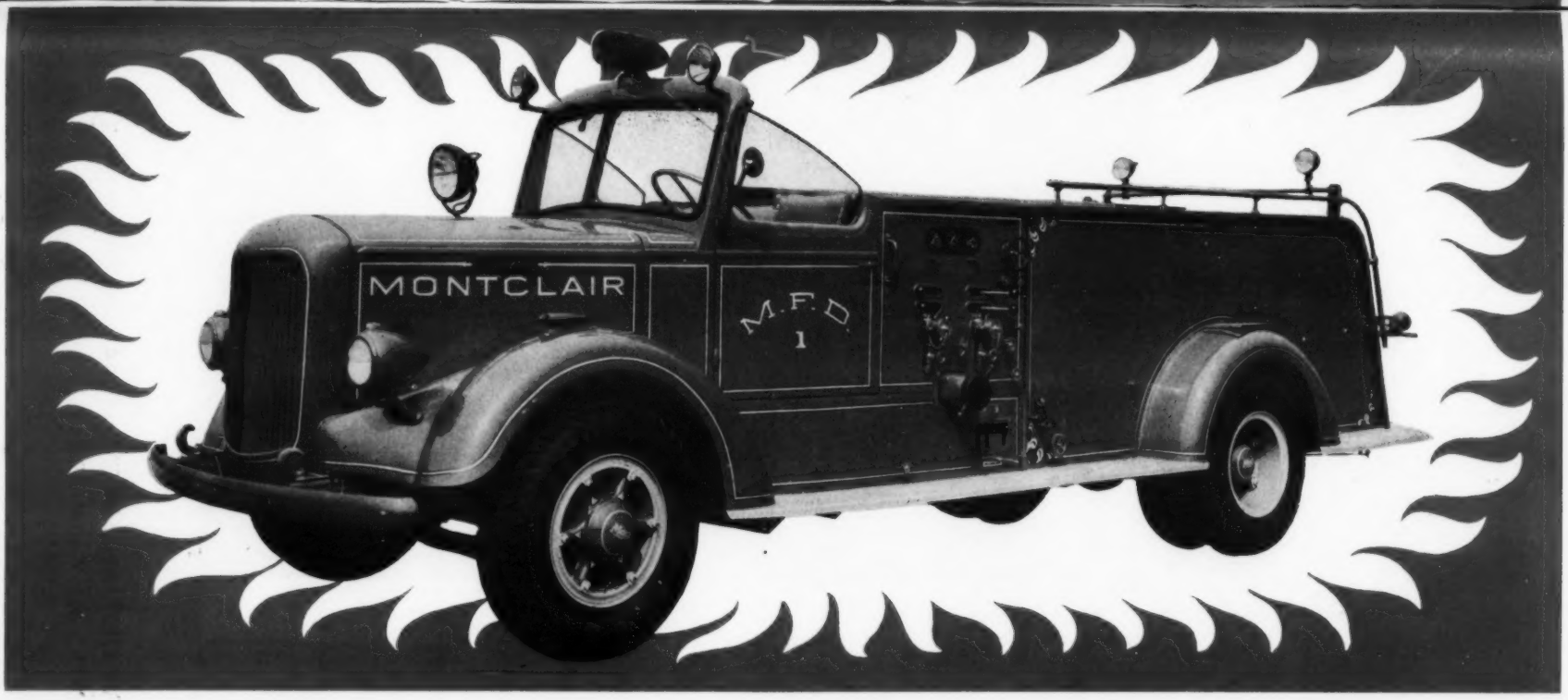
With this new C-O-TWO release valve the operator merely closes his hand to operate the release lever, just above the carrying handle, and carbon dioxide gas, the fastest non-damaging fire extinguishing agent, is released against the fire in split seconds. Time is saved . . . gas is saved. Even while carrying a fifteen pound extinguisher, C-O-TWO gas can be discharged and shut off as quickly as the hand is closed and opened. The New SQUEEZ-GRIP is the most modern contribution to fire protection. It's Safer because It's Faster.

C-O-TWO is a registered trademark and corporate name of this company. C-O-TWO is inspected and labeled by the Underwriters' Laboratories; approved by Factory Mutuals and the Bureau of Marine Inspection and Navigation. To be safe specify C-O-TWO.

C-O-TWO FIRE EQUIPMENT COMPANY

NEWARK, NEW JERSEY

Sales and Service in the Principal Cities of United States and Canada



ILLUSTRATED ABOVE, MACK 750-GALLON TRIPLE COMBINATION PUMPER.

A Mack's best friends are the men in there fighting the fires. They know it'll stay right with them, keeping the water coming as long as they need it. Ask them—and you'll know Mack quality isn't a word—but a promise of sure performance and dependability.

MACK MANUFACTURING CORPORATION, FIRE ENGINE DIVISION
EMPIRE STATE BUILDING, NEW YORK, N. Y.

Mack
FIRE APPARATUS

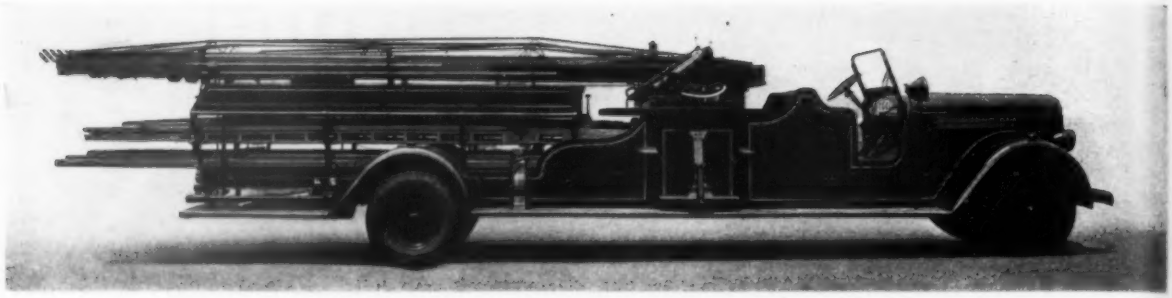
If your community needs additional fire-fighting equipment or replacements, and if you can obtain permission from the War Production Board — think of Mack. Remember, Mack Fire Apparatus is backed by the greatest engineering resources in the industry.

ARMY E NAVY

BUY WAR BONDS

IF YOU'VE GOT A MACK, YOU'RE LUCKY...IF YOU PLAN TO GET ONE, YOU'RE WISE!

We shall appreciate your mentioning FIRE ENGINEERING *when writing advertisers*



WHEN LIVES AND PROPERTY ARE AT STAKE—

a Pirsch All Powered Aerial Ladder is a good piece of equipment to have around. When it comes to saving lives and property there are no substitutes for speed and dependability; Pirsch has both plus a lot of exclusive features found only in America's first 100% powered aerial ladder truck.

Pirsch ladders are built to "take it"—scene at right shows two Pirsch aerials: one of aluminum alloy the other of wood. Whether fire ladders are of metal or wood they can "take it" if built by Pirsch.

65' aerial truck featured at top of page is equipped with the new Pirsch multiple section wood aerial ladder; delivered to City of Pittsburgh, Pa., where three Pirsch aerials (65', 85' and 100') are in service.

PETER PIRSCH & SONS CO. KENOSHA, WIS.

"BUILDERS OF AMERICA'S FIRST ALL-POWERED AERIAL LADDER TRUCK AND AMERICA'S FIRST 100' AERIAL LADDER"

in DENVER- *The Mile High City—*

The two Fire Department Rescue Squads—

★

Eight hospitals (including City, County, State and Federal) —

★

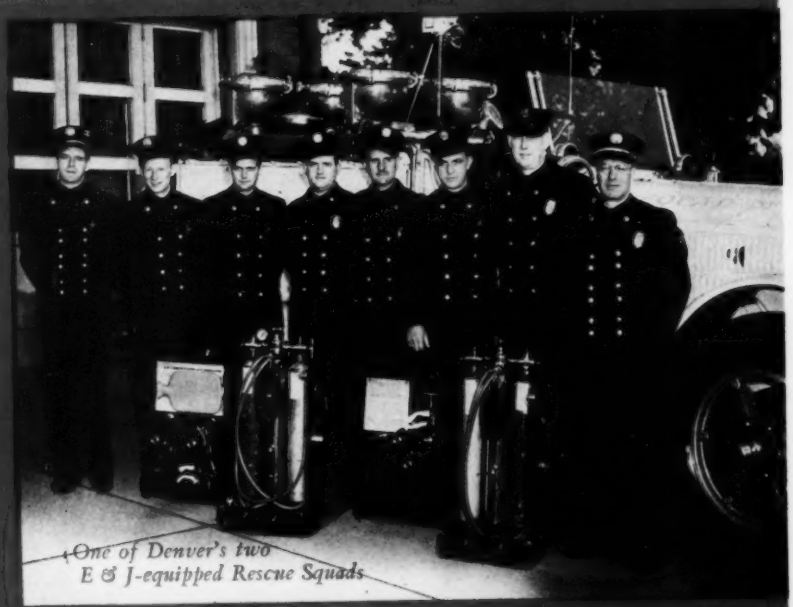
The Rocky Mountain Arsenal—

★

The Colorado highway courtesy patrol —

★

Are among the many users of



One of Denver's two E & J-equipped Rescue Squads

The E & J RESUSCITATOR INHALATOR and ASPIRATOR

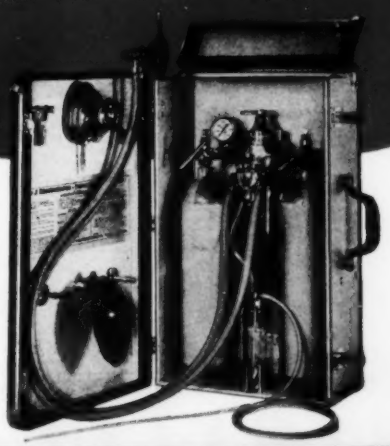
FIRST CHOICE IN FIRST AID

HUB of the Rocky Mountain area, Denver is not only one of the highest cities in the country from the standpoint of altitude, but it is tops in many other respects, particularly in its first aid work.

The progressive Denver Fire Department, with each of its two crack rescue squads equipped with two E & J Resuscitators, was the first E & J user in the Mountain States. Each squad started using one of these machines back in 1933. Three years later two more were added; and all four have been in regular service since.

Wherever you go, from one end of the country to the other, you'll find ever-increasing evidence of E & J dependability—time-tested proof of its superiority.

★ *Write to any of our distributors listed below for further information.* ★



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Philadelphia — New York City — Pittsburgh — Birmingham, Ala. — Boston — Chicago

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Pioneers and Specialists in Mechanical Artificial Respiration

"AKRON BRASS"

MULTIVERSAL NOZZLE

An automatic fire fighter that once put into action needs no further attention—releasing needed manpower for duties at other points.

The Akron Multiversal Nozzle is a one piece unit ready for action as soon as hose lines are connected. In position and under pressure it plays a stream without attention, as long as necessary. Remarkably flexible. Nozzle turret, operating on ball bearings, swings in a complete circle and allows stream to be directed up or down—from an elevation of 90° to 30° above horizontal.

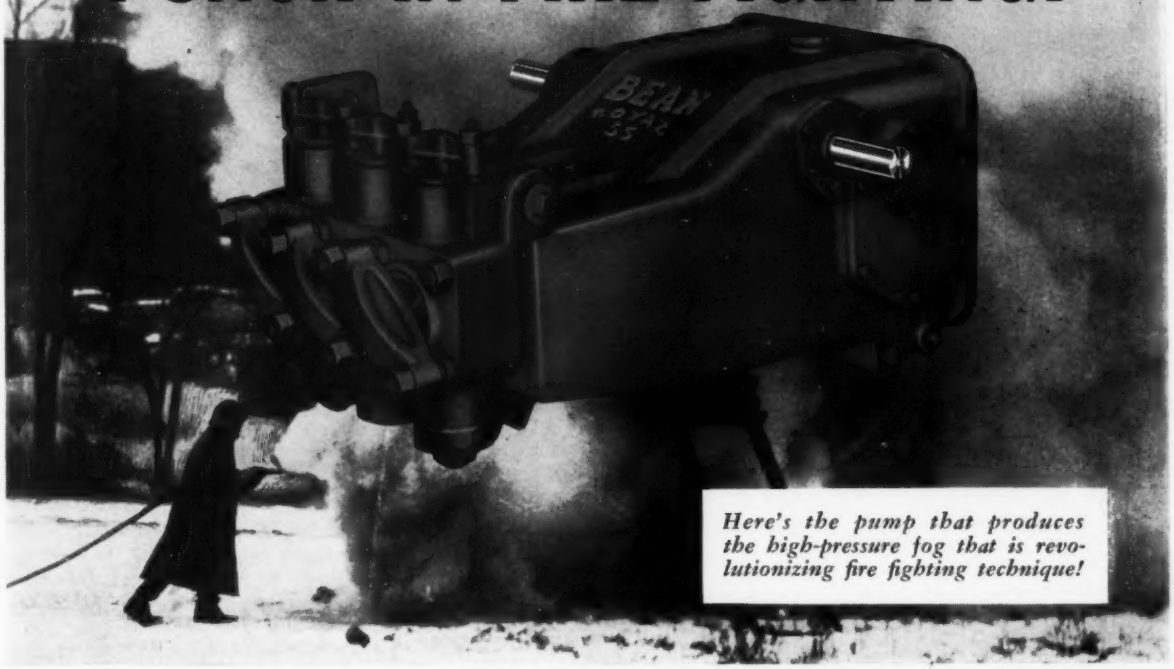
AKRON BRASS MFG. COMPANY, INC.
WOOSTER, OHIO

Deck-pipe type Multiversal Nozzle now in operation on Coast Guard patrol boats.

AKRON BRASS

FIRE FIGHTING EQUIPMENT

THE PUMP THAT PUTS A NEW PUNCH IN FIRE FIGHTING!

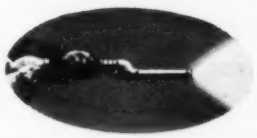


Here's the pump that produces the high-pressure fog that is revolutionizing fire fighting technique!

Delivers 600 lb. Pressure Fog at the Nozzle!

ONE MAN *handles Fog Fire Gun and hose. Stream can be adjusted with one hand.*

Efficient for use with 600 lb. or more nozzle pressure only.



FOG FIRE GUN *graduates from straight "power" stream to close-up fog.*

This 3 cylinder, all enclosed, oil bath, plunger type pump is the "heart" of the FMC Fog Fire Fighter. And what a fighting heart it is! Pumps 60 gallons of water a minute; built for much higher pressures it easily gives 600 lb. nozzle pressure (800 lbs. at pump) without overworking. Breaks up water so fine that one gallon properly used has the fire quenching possibilities of 35 low-pressure gallons. Makes fog that puts out fires faster with no water damage and no water shortage.

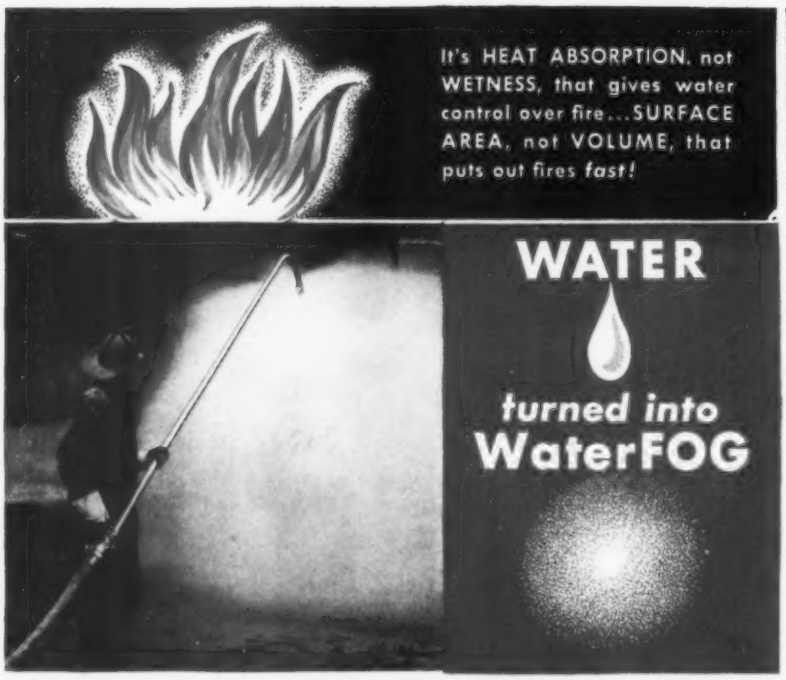
Don't confuse FMC High-Pressure Fog with *any other system.* There's nothing else like it for speed, for efficiency, for all-type fire protection. Proved on hundreds of fires all over the country. Get details from John Bean Mfg. Co., Lansing, Mich., or Bean-Cutler Division, Food Machinery Corporation, San Jose, Calif.

FMC FOG FIRE FIGHTERS *are low cost units. Carry own water and equipment. Several models.*

FMC *Original* FOG FIRE FIGHTER

FOOD MACHINERY CORPORATION

JOHN BEAN MFG. CO., 752 HAZEL ST., LANSING 4, MICH. • BEAN-CUTLER DIVISION, 452 JULIAN ST., SAN JOSE, CALIF.


It's HEAT ABSORPTION, not WETNESS, that gives water control over fire...SURFACE AREA, not VOLUME, that puts out fires fast!
WATER
turned into
WaterFOG

DOOMS EVEN OIL FIRES, FAST

You'll find in your physics book that speed of heat exchange increases with surface area exposed to heat. (That's the principal of the radiator and the refrigerating coil, too.)

By transforming water into tiny particles — much finer than spray — Rockwood WaterFOG nozzles multiply many times the total surface area of a given volume of water . . . thus making water (cheap, plentiful) your most efficient firefighter on flammable liquid fires!

In addition to *cooling* fires faster, WaterFOG particles, being light, stay longer in the combustion area, instead of plunging into the liquid, agitating it, inciting further vaporization. They float gently onto the surface, absorbing heat from the vapors and from the liquid — and then, turning into steam, they *expand*, smothering the fire!

"Flash-back" is prevented. Costly chemicals are saved. Water damage is lessened. Safe to use on electrical fires. Write for Bulletin 123.

3 WAYS TO PUT OUT FLAMMABLE LIQUID FIRES

1. **Quench the burning vapors**
2. **Lower liquid temperature to retard vaporization**
3. **Diminish supply of oxygen**

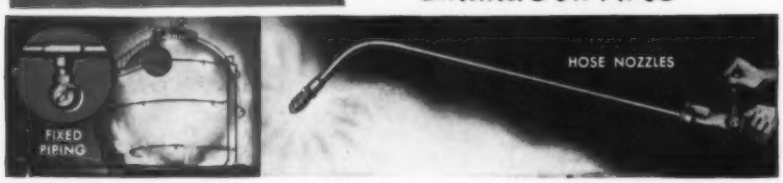
WaterFOG does all three . . . with water . . . faster!

WaterFOG is created by impinging streams from specially-designed Rockwood nozzles — engineered in correct particle size, fog pattern, and velocity for your conditions. Fixed piping installations, hose nozzles and applicators. Rockwood installations approved by Underwriters' Laboratories and Associated Factory Mutuals; used by Navy, Coast Guard, hundreds of industrial plants. *Executives!* colored movie (16 mm.) showing tests of Rockwood WaterFOG is available.

ROCKWOOD SPRINKLER COMPANY
54 Harlow Street, Worcester, Mass.
Specialists in Fire Protection Engineering, Equipment and Installation since 1907

ROCKWOOD WaterFOG

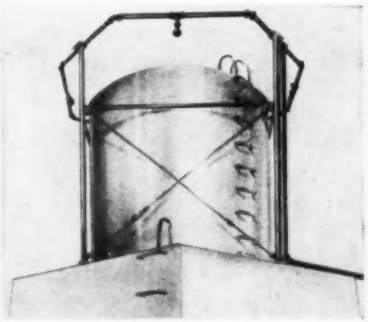
Water Engineered by Rockwood Cools, Confines, Smothers Oil Fires



Complete Rockwood Fixed Piping Installation Protects Oil Storage

This drawing illustrates the use of a Rockwood-engineered system of WaterFOG fire protection — consisting of fixed piping, WaterFOG heads, valves, and automatic control devices.

In planning such systems, Rockwood engineers (authorities on hydraulics, as applied to fire protection) consider all factors involved in each hazard — spacing



of heads, distance between heads and hazard, obstructions, etc. — in order to arrive at the most complete protection.

WaterFOG fixed piping installations are being used to assure both the prompt detection and the quick, automatic extinguishment of fires in fuel oil, kerosene, mineral spirits, and other flammable liquids. Typical WaterFOG-protected hazards also include quench and dip tanks, dryers, paint shops, transformers, electrical equipment.

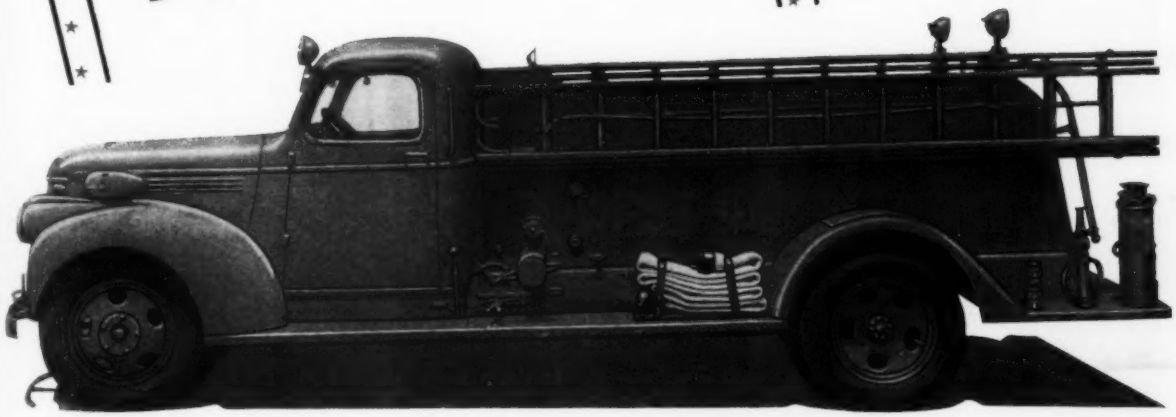
Portable WaterFOG Equipment for Regular Fire Hose Lines

This photograph shows (A) WaterFOG applicator which discharges low-velocity WaterFOG in ball shape; and (B) SG-40 Nozzle to which applicator is attached.

With applicator removed and FOG Tip (C) inserted, SG-40 Nozzle will discharge either high-velocity WaterFOG with considerable forward projection, or from (D), a straight stream for attacking inaccessible places or rooting out deep-seated fires.

The 1½" SG-40 Nozzle takes 4′ or 10′ applicator; the 2½" size takes 12′ applicator.

WAR TIME PROTECTION



Some of the Trucks Built for Uncle Sam and Our Boys at the Front and in Our Camps

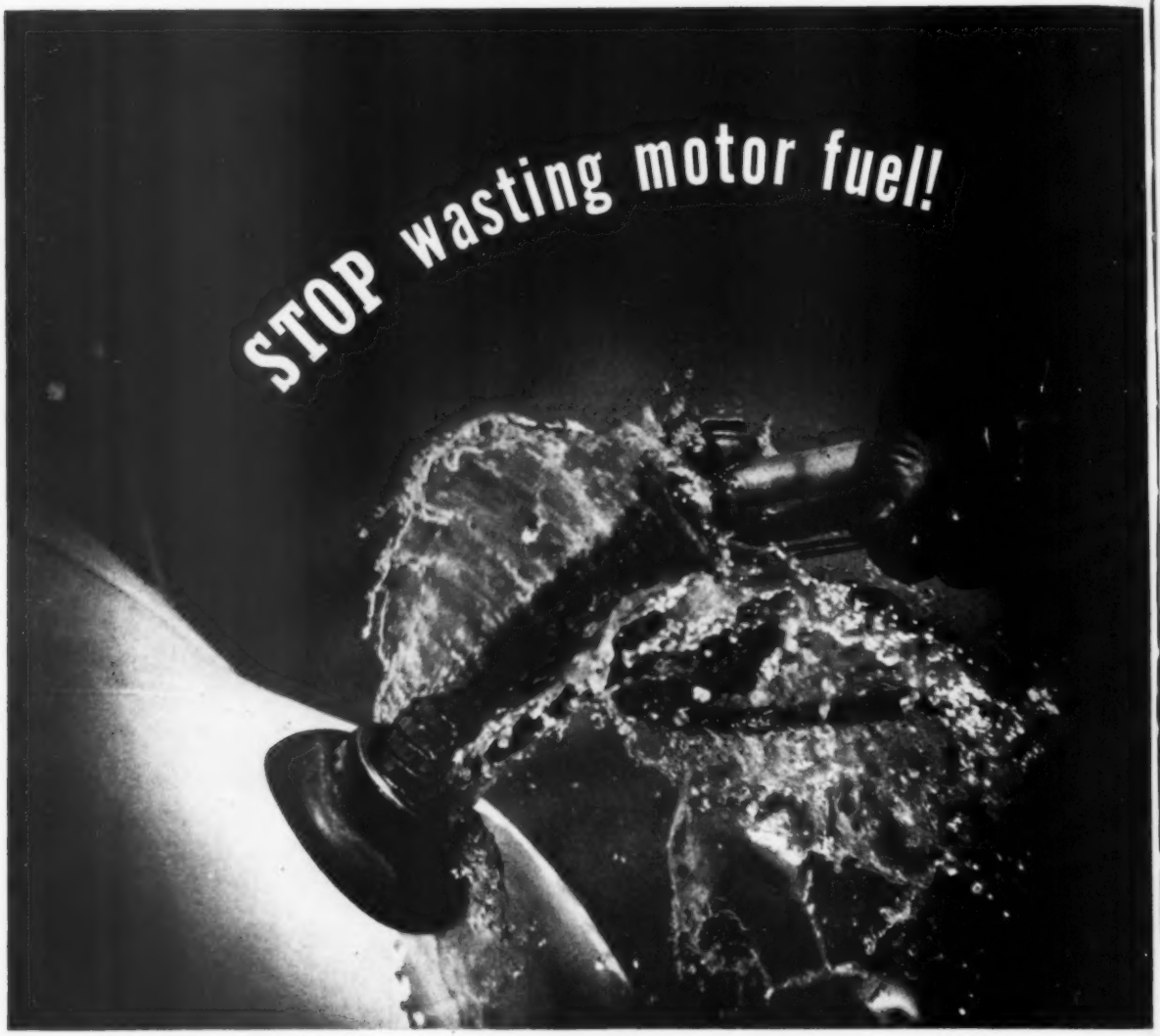
FURNISHED BY

OREN

OREN builds a complete line of FIRE TRUCKS in all types and sizes. Write for full information.

OREN FIRE APPARATUS COMPANY

ROANOKE, VIRGINIA



RING-FREE Motor Oil saves fuel 2 ways

RING-FREE REMOVES CARBON. Carbon on pistons, rings, valves decreases motor efficiency—leads to loss of power—wastes fuel. Macmillan RING-FREE Motor Oil *removes carbon* while the motor runs! That means better motor lubrication and substantial fuel savings.

RING-FREE REDUCES FRICTION. The 2nd thing RING-FREE does to save fuel is reduce motor friction fast! That releases more power to the drive shaft and really cuts fuel waste. Here's proof: In 1094 certified road tests, with various makes of owner driven cars, the average saving of *gasoline* was 1.3 miles per gallon after crankcases had been drained and refilled with RING-FREE Motor Oil. In many types of *Diesel* operations, as much as 25% reductions in operating costs (including fuel and maintenance) are reported. At the same time, oil consumption is reported decreased. Remember saving fuel is important — but beyond that, when it's better motor lubrication that saves fuel it also means a reduction of motor wear.

MACMILLAN RING-FREE MOTOR OIL

MACMILLAN PETROLEUM CORP.
50 W. 50th, New York; 624 S. Michigan Av., Chicago; 530 W. 8th, Los Angeles
Copyright 1943 Macmillan Petroleum Corp.

REDUCES WEAR BY REDUCING FRICTION

winnah!

OF THE

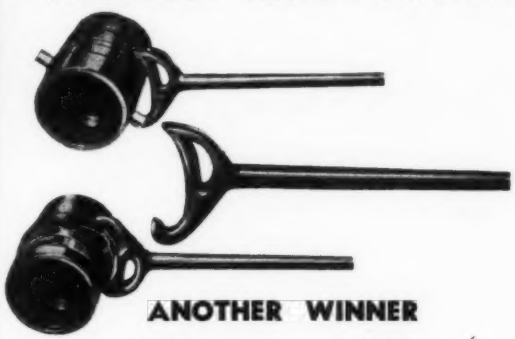
Coupling Naming Contest

THE FIRST PRIZE WINNER IS FIREMAN FIRST CLASS JOHN R. MALOWNEY. HIS PRIZE-WINNING NAME FOR A PRIZE-WINNING COUPLING IS—

"KLEERLINE"

a name which really typifies this new, never-a-delay coupling—for it is so constructed as to be clear of all obstructions, with no lugs or pins to catch, preventing injury to men and hose. The "KLEERLINE" helps a hose line to come out of the chute faster—its new improved hand grip allows for faster assembling and easier handling and makes easier packing on the truck, allowing more hose in less space.

The winner, Fireman First Class John R. Malowney of Ladder Co. No. 7, Springfield, Ohio, was one of some 250 entrants. His $100 bond has been sent to him. We wish to extend our congratulations to him, and our heart-felt thanks and appreciation to the other entrants who spent time and thought to produce the many good names which were submitted, also to the many hundreds of others who thought of names but failed to submit them. John R. Malowney's "KLEERLINE" was the choice of the judges. We want to also thank the judges—Chief Daniel Tierney of Arlington, Mass.; Chief Selden R. Allen of Brookline, Mass., and Chief Joseph Sullivan of Utica, N. Y., who spent many hours studying the entries and picking a winner.



ANOTHER WINNER

"Universal" SPANNER

Here is a true running mate for the "KLEERLINE" coupling—a universal winner and made especially to handle this particular coupling, it nevertheless can be used on ANY other type of coupling you may now have on your truck. This coupling and spanner combination is beyond doubt the best and most practical your money can buy. Don't risk personnel, equipment, or loss of valuable time. Progressive departments use and have made "KLEERLINE" couplings permanent equipment.

★ **INQUIRIES INVITED FROM RESPONSIBLE DEALERS IN FIRE EQUIPMENT** ★

ANOTHER AWARD

We are proud to announce also, at this time, that the Army-Navy "E" award for efficiency has been granted to the Watson Elevator Co., Inc., manufacturers of the "KLEERLINE" coupling, for their contribution to the war effort, and with whom we are proud to be an "associated" company. The same efficient craftsmanship that won this highly coveted award goes into every single "KLEERLINE" coupling.

ANDERSON FIRE-FIGHTING EQUIPMENT COMPANY, INC.

An Associated Company of

WATSON ELEVATOR CO., INC.

Established 1914

407 WEST 36TH STREET, NEW YORK 18, N. Y.

Phone MEdallion 3-3200

Police radio saves police cars and men many a "wild goose chase."

That's one big reason why fire departments ought to be furnished with the same type of equipment. With RCA two-way radio in fire stations and apparatus, fire chiefs could save firemen and fire trucks many useless trips—get extra crews quicker when really needed.

Without radio to keep them continuously informed, firemen have no choice but to go tearing off to the far corners of their territory—perhaps only to find it's a fizzle and that they are desperately needed somewhere else.

With radio, fire-fighting forces can be instantly and continuously directed, recalled, or maneuvered, as circumstances require.

RCA will gladly answer any questions about any type or application of RCA Emergency Communications Equipment. While availability of the equipment is limited by war priorities, any information you can give us now regarding your future need of such equipment will help us serve you better just as soon as the war permits.

RCA

RCA EMERGENCY COMMUNICATIONS EQUIPMENT

RCA Victor Division • RADIO CORPORATION OF AMERICA • Camden, N. J.

MEET THE LIGHTWEIGHT CHAMP OF THE FIRE FIGHTING FIELD . . .

Incorporating all the basic engineering advances which have made the Ward LaFrance name famous in the fire field, Model 47T is ideally suited to the needs of many communities. This basic design (described below) may readily be modified to individual local requirements, as are its larger companion types. For complete information, write today.

WARD LaFRANCE TRUCK DIVISION

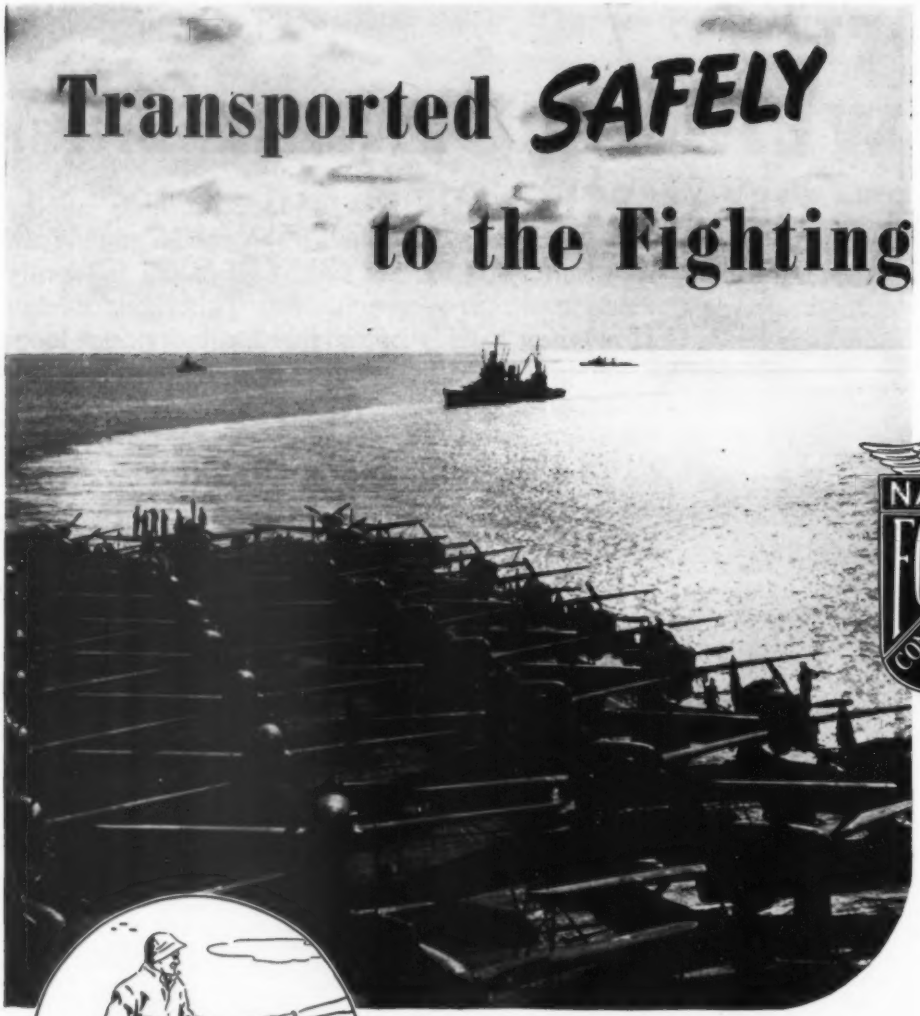
ELMIRA, GAI **NEW YORK**

© 1943 Great American Industries, Inc., Meriden, Conn.

● QUICK FACTS

Overall length . . . . . 23 ft. 3 in.	Pump . . . . 500 G.P.M. 2-stage Centrifugal (Rotary optional)
Weight (empty) . . . . . 9,650 lbs.	Hose Capacity . . . 450 ft. ¾ in. hose, 300 ft. 1 in. hose.
Cylinders . . 6 Wheelbase . . 171 in.	Booster Tank . . . . . 150-350 gals.
Turning Radius . . . . . 30 ft.	
Horsepower 112	

Transported SAFELY to the Fighting Front



Official U. S. Navy Photograph

Arriving safely at their destination, their protecting convoy swings astern. Protection for this carrier against fire also was not overlooked as no hazard is more dreaded than a fire at sea.

National Foam Fire Protection has been adopted and is being used extensively by the U. S. Navy, by most oil refineries and by many other large industrial plants. National Foam extinguishes the most hazardous and difficult types of fires by shutting out the oxygen with a gas-tight foam blanket and effectively eliminates flashbacks.

IN FIRE DEPARTMENT SERVICE

National Foam System has equipment especially designed for the use of Fire Departments to meet all types of fire fighting requirements. Complete engineering service available.

The experience of our Engineering Department is at your service.

NATIONAL FOAM SYSTEM, INC.

Specializing in Foam Fire Protection

1632 Sansom St., Philadelphia, Pa.

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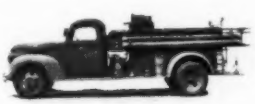

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FIRE ENGINEERING

NOVEMBER, 1943 VOL. 96. NO. 11

With the Editor

A New Wartime Hazard An explosion in the Peabody Theatre at Memphis, Tenn., a few weeks ago emphasized a new hazard brought about by wartime restrictions on the use of refrigerants.

Because of inability to secure the type of gas specified for use in the refrigerating equipment of the theatre's air conditioning plant, the management substituted another gas widely used in refrigerating systems. Ignition of this substitute gas, some of which had leaked out of the system, caused an explosion which killed one man and severely burned another.

The gas which was supposed to be used in the system was non-inflammable while that substituted was inflammable.

That there will be many such cases of substitution is certain, for if one type of refrigerant is unobtainable, the user in desperation will take any which is available whether or not it is safe for his particular installation.

Fire departments might well warn local users of air conditioning apparatus of the danger of substituting refrigerants without first securing the advice of the builders of such equipment.

Gasoline for Volunteers Some volunteer fire departments still report inability to secure supplemental gas rations for their members, to be used in connection with the discharge of fire duty. Apparently all ration boards are not yet cognizant of the need for transportation for fire fighters when going to and from alarms.

As these men endure many hardships and inconveniences, and serve without pay, in protecting their communities against the ravages of fire, it seems that the least the OPA could do for them would be to provide the additional gas they need in their line of duty. It should be remembered that today any fire loss is a loss to national defense.

Many county organizations have already gone to bat for the volunteers and have won the cooperation of the local rationing boards. In Nassau County (N. Y.) for instance, the County Fire Commission has established a procedure by which the rationing board supplies each volunteer with sufficient additional gas to attend all fires. Under this particular plan, the local fire chiefs must certify the need for such quantities of gas as may be requested by department members. The board supplies to the volunteers every gallon of gas actually required for firemanic use, but no more.

A uniform practice on the part of rationing boards throughout the country is surely needed.

Oil on Hose Couplings To prevent rusting of malleable iron couplings now being supplied new hose, some fire departments have turned to the use of oil.

This is a dangerous practice if not done carefully. Excessive oil on couplings may soak through the jacket and ruin the rubber lining.

If oil is to be applied, it should be used very sparingly. A cloth dampened with oil might be employed, and care should be taken that none of the oil reaches the jacket.

Fred Sheppard

How the Normandie was Protected Against Fire During Salvaging

Use of Cutting Torches from Stem to Stern of Ship Made Necessary Constant Vigilance

By JERRY DALY

THE U.S.S. Lafayette (former French liner S.S. Normandie), rapidly approaching complete salvage following a disastrous fire on February 9, 1942, which culminated in the capsizing of the potential troop ship early in the morning of February 10, at Pier 88, North River, New York City, was guarded from further fire during hazardous salvage operations by retired Battalion Chief John J. Keeley of the New York Fire Department.

Official U. S. Navy Photograph

View of the Normandie Showing Provisions Made for Fire Fighting

A. Gangway carried eight-inch main from pier to topside catwalk. B. Catwalk carried four-inch main the length of ship. C. Firehouse.

The salvage of the 79,280-ton Normandie was taken over on February 24, 1942, by the Chief of the Bureau of Ships, Navy Department, and was placed under the immediate command of the Supervisor of Salvage of the Navy, Captain (now Commodore) Wm. A. Sullivan, U.S.N., who was succeeded a year ago by Commander (now Captain) Bernard F. Manseau, U.S.N., when Captain Sullivan was transferred to North Africa to organize and command the greater activity and responsibility required in the tasks of salvage operations in that area.

Since then Capt. Manseau has successfully carried on the Normandie job in close cooperation with the salvage contractors, Merritt-Chapman & Scott Corporation, who employed Chief Keeley on the recommendation of New York City's Fire Commissioner, Patrick Walsh,* to whom Captain Sullivan had addressed a request for the recommendation of a conscientious and experienced fire fighter. There were a hundred retired chief officers available but Commissioner Walsh offered the opportunity to Chief Keeley. He knew from years of experience with "Jack" Keeley, as fellow Firemen and brother officers in the high hazard fire districts of lower New York, that Keeley would be right on the job and not in a swivel chair behind some executive desk.

On February 24, 1942, two weeks after the Normandie capsized, Chief Keeley reported to Captain John J. Tooker, Superintendent for Merritt-Chapman & Scott Corporation. Captain Tooker has been a diver and salvage expert for over twenty years. From the very outset the most cordial cooperation existed between the Navy and the salvage corporation personnel. Chief Keeley a total stranger to the Navy and to his new employer, encountered no obstacles or delays on the part of the Navy or the contractor.

Until Chief Keeley arrived and had oriented himself, the Normandie was protected from fire by the salvage tugs "Resolute" and "Chapman" standing by with 1½" hose lines, some CO^2 and some soda and acid extinguishers. Before he could gather the nucleus of a trained fire fighting staff, Chief Keeley ordered the funnels of the ship cleaned of soot. While he was selecting a fire brigade of twenty-five retired officers and men of the New York Fire Department, Chief Keeley struggled along with a gang of laborers and longshoremen. On March 17, his personally selected staff of trained "smoke eaters" was fully organized. They went to work on a three-platoon schedule.

Pier Pumps Used

Two pumps of 2,000 gpm at 150 pounds in the boiler room of the French Line pier were the first objects of Chief Keeley's plans for a fire fighting plant. The pumps supply a 12-inch main extending along the ceiling of the main floor of the pier to feed the standpipe and sprinkler system. At a point on the pier abeam of the prostrate vessel, the 12 inch main was tapped twice with 5 inch mains about 20 feet apart. These two 5 inch lines were extended toward the Normandie. Immediately inside the north wall of the pier they were joined in a union feeding an 8 inch pipe rising 60 feet to the top floor of the pier. There the 8 inch line was carried to the topside of the Normandie on a utility bridge or workmen's gangway which spanned the 125 foot gap between the catwalk on the upturned starboard hull of the vessel and the top floor of the pier.

Four-Inch Line Protects Ship

This 8 inch water supply line was met at the catwalk along topside by a 4 inch main which extended 900 feet of the 1029 feet of hull. This 4 inch line had 2½ inch and 1½ inch outlets every 60 feet. Each outlet was equipped with 100 feet of hose and a spanner. To cope with possible failure of this only source of water supply, Chief Keeley set up an auxiliary pump (gasoline) of 1000 gpm at 150 at the waterside of the pier with a suction screen below mean low water.

Paralleling the 4 inch water main from stem to stern on the topside was a 1 inch pipe for the CO_2 system which had outlets every 75 feet. The source of supply was a battery of twenty-four huge cylin-

*WHY WALSH PICKED KEELEY FOR THE JOB. John J. Keeley, born, New York City, 62 years ago; Spanish War veteran, served with the U. S. Volunteers, Philippine Islands. Appointed Fireman June 23, 1908, Engine 17; awarded Fire College efficiency medal 1915; Lieutenant 1917, Engine 31; Captain 1922, Engines 18 and 13; Batt. Chief 1930. Retired in 1933. Roll of Merit seven times; no complaints. Never drank or smoked. Chief Kenlon rejected his application for retirement in 1928, to wit: "The department needs more commanding officers like you." Keeley stayed five more years. A conscientious and courageous fellow. "Jack" Keeley is no slide rule or logarithm expert, but a courageous, two-fisted, slam-bang practical sort who regards fire protection as a public trust. His candor shocks sycophants. Too bad he wasn't "discovered" before the Normandie fire.—The Author.

ders of CO_2 gas stored in a "firehouse" topside near the gangway from the pier. The "firehouse" was a shack 15 feet x 10 feet. It contained 400 feet of chemical hose with horn-nozzle affixed. This portable hose could be connected to the CO_2 supply line, but there was never any occasion to use it. The "firehouse" also contained two small hand drawn hose wagons, each on four rubber tired wheels of hand truck size. Each wagon carried 450 feet of 1½ inch and 2½ inch hose with spanners and nozzles. Sand buckets, water pails, small CO_2 extinguishers and one-quart carbon tetrachloride extinguishers completed the equipment of the hose wagons. The local fire call was six blasts of a bosun's whistle. This signal summoned all members of the fire guard to the "firehouse" for orders. The pier equipment consists of two types of ADT fire alarm telegraph. Signal 3-852-1 is the manual alarm for which there are fifteen snap boxes throughout the pier and signal 3-852-4 is the automatic valve alarm on the sprinkler system. The nearest public alarm box is 852 at 49th Street and 12th Avenue one city block distant on the waterfront.

Cutting Torches Create Fire Hazard

As many as thirty-five acetylene torches were burning simultaneously in as many parts of the ship day and night for many months during salvage operations. All burning jobs were closely supervised by fire guards. There were many incipient fires, of course. That these fires were quickly extinguished was due only to the vigilance, matured judgment and experience of Chief Keeley's trained staff. There was maintained at all times an honor system of notification to the fire guards every time that a burning job was scheduled. A fire guard stood watch at the point of operation. Sometimes he had a charged line with controlling nozzle. Other times a CO_2 extinguisher or a pail of water or both were on hand-depending on the hazard involved, its location and its contents.

Superstructure Cut Away

At times there were as many as 800 men working on the ship. Every part of the ship that had to be removed was burned off or burned through. The 5,000 tons of superstructure above the promenade deck both above and below tide water as the vessel lay prone on her port side, had to be burned off. Time was of the essence and, since burning was faster than any other means, the acetylene torch held sway. Consequently the job has been completed much earlier than anticipated and at a cost of about $4,500,000, which is considerably under original calculations.

There was only one fire in the entire operation that required material assistance of the city fire department. It occurred on Saturday night, April 18, 1942, in the cork insulation of a refrigerator on F deck toward the stern. The awkward posture of the vessel made the task of reaching the fire extremely difficult. The city fire department had to cut holes in the hull and through those apertures the involved area was flooded with cellar pipes and distributors.

"No Smoking" was the order of the day throughout the entire operation, and there were no fires from that cause. Limited smoking was permitted in a policed area on the catwalk where there were "safety zones" for that purpose, but at all times under the watchful eyes of a fire guard.

When the stage of salvage operations had progressed to the point where the ship was about ready to rise out of its mud bed, the 4-inch fire line along the catwalk on the vessel was detached for removal to what was soon to become the top deck instead of the north side of the hull. The 8-inch pier connection was eliminated with the dismantling of the gangway. All interior extinguishers, buckets, sand pails, etc., were rehung on pendulum brackets to insure a perpendicular position as the vessel reverted to its normal keel.

Flexible System of Water Supply

To guard against any loss of water supply while the pumping operations were righting the vessel, two pumps of 1,000 gpm each at 150 were placed in cradles fore and aft on the main deck and were connected to the 4-inch line, now relocated about the center of the 119-foot beam of the ship. The two pumps took suction from the river until the elevation of the main deck reached the level which made suction lift impossible with pumps at that height. Thereafter two pumps of 1,000 gpm were mounted on opposite ends of work barges along the port side of the vessel. From these pumps, two 2½-inch hose lines were stretched up to the 4-inch water main on the ship. The 8-inch riser on the pier was eliminated and a 4-inch substituted with two 2½-inch outlets at the top floor of the pier for hose stretches to the ship. The 4-inch main along the center of the ship was equipped with 2½-inch intake butts along the port and starboard gunwales for hose connections from the pumps of the tug boats that towed her out of the slip to a shipyard where she will be put in shape for whatever purpose only time and Naval censorship can tell.

Seattle Fire Losses Low Despite Wartime Hazards

Although the war has brought an increase in fire hazards, the Seattle, Wash., Fire Department has kept its 1942 fire loss 25.3 per cent below the average for the past thirty years and the per capita loss was 49.9 per cent lower than the national per capita loss, Chief William Fitzgerald stated in his annual report. The fire loss was $566,570 and the per capita loss $1.19.

Chief Fitzgerald attributed this decrease to "the highest off-shift response to multiple-alarm fires in the history of the department."

The war added many activities to the department's program, including recruiting of an auxiliary fire brigade, but nevertheless the department saved $62,672 of its budget allotment and turned this back to the city's general fund.

The plant protection program carried out for several years was intensified during the year and this reduced in number and severity industrial fires.

Another program, tending to increase fire safety on the entire waterfront, was undertaken during the year to end illegal parking of automobiles and trucks on docks and piers and to eliminate smoking on docks and piers. There were no serious dock fires during the year.

Correction

In the October issue of FIRE ENGINEERING it was stated that William H. Frank, Jr., was Chief of the Poughkeepsie, N. Y., Fire Department before he became State Fire Coordinator. This is an error, as Irv D. Merrick has been Chief for the past year, succeeding Chief Chris W. Noll, who passed away in the Fall of 1942.

Official U. S. Navy Photograph

Transit Readings at Set Intervals Revealed that the Stern Had Settled About Three Feet and that the Bow Had Raised When this Photograph Was Taken

Review of 1942 Higher Court Cases Involving Municipal Firemen

By LEO T. PARKER
Attorney-at-Law, Cincinnati, Ohio

DURING 1942 many municipal firemen sustained injuries as a result of ordinary risks, and also resulting from defective floors, poorly constructed chairs, poorly lighted stairways, steps, and the like. Whether or not compensation is collectable depends upon the circumstances of the injury. In other recent higher court cases peculiar points of pension laws were before the courts for decisions.

Therefore, the purpose of this article is a review of 1942 higher court cases which reveal certain modern methods of deciding legal controversies involving municipal firemen. First, it is important to know that the universal law is that all firemen are legally obligated to exercise ordinary good judgment and care in view of protecting themselves against injuries. In other words, to avoid risks of disallowance of injury claims all firemen should be able to prove that they used the same degree of care as would have been exercised by other ordinarily prudent and intelligent firemen and under the identical circumstances. Of course, this rule of law is applicable only to suits for damages and not to compensation laws.

The modern courts consistently hold that when the literal interpretation of the Workmen's Compensation Law involves any absurdity, contradiction, injustice, or extreme hardship, the courts may deviate from the literal meaning of the words. In other words, the court may interpret the law in accordance with what the testimony indicates was the intention and meaning of the law making body. Therefore, the real intention of the law makers will in all cases prevail over the literal sense.

For example, in Kellerman v. City of St. Paul, 1 N.W. (2d) 378, reported January, 1942, it was shown that the Workmen's Compensation Act of Minnesota provides that disability resulting from an occupational disease is not compensable unless the disease is contracted "within the twelve months previous to the date of disablement".

One morning a fireman responded to a call and assisted other members of the department in extinguishing the fire and afterward cleaning up the basement of the premises. While cleaning out a drain he felt a severe pain in his chest. An amblance was called, and he was taken to a hospital, where he died a few minutes after his arrival. His widow filed a claim in behalf of herself and two minor children alleging that the fireman contracted coronary sclerosis while on active duty and died from the effects of the disease. It was denied that the condition causing the fireman's death was in any way related to his duties as a fireman. Also liability was denied on the ground that the disease which caused the fireman's death was not contracted within twelve months of disablement, as required by the above mentioned state law.

It is interesting to observe that the higher court held in favor of the fireman's dependants, and said:

"The Compensation Act is a remedial statute and must be liberally construed to effectuate its purpose. Although it is true that if the meaning of a statute is plain there is ordinarily no room for construction. It is equally true that the legislature should not be taken to intend absurd or contradictory consequences. . . . The general nature of coronary sclerosis must be presumed to have been known to the legislature."

Another State Law Broadly Construed

In construing statutes or ordinances the ascertainment of legislative intent is the aim. The construction to be adopted and used must be reasonable. Therefore, where questions of government arise the construction will not be along technical lines but rather upon broad and practical considerations.

For example, in Evans v. City of St. Paul, 2 N.W. (2nd) 35, reported February, 1942, it was shown that a city charter provided that the "case of disability through * * * sickness * * * , in case of firemen, such firemen shall, notwithstanding such sickness * * * , receive his salary, less the amount paid a substitute, if any *substitute* is employed for a period not exceeding 12 months."

The fireman sued to recover "back pay" amounting to $1,389, the difference between $1,782.50 which he would have earned if drawing full pay, less $392.55, the amount received by him after monthly deductions from his salary for substiutes.

The legal question arose whether the disabled fireman thus "laid off" could recover from the city full wages if only "temporary" firemen were put into his place. The substitutes really constituted a reserve force to be placed wherever the fire chief deemed their presence needed. In holding against the fireman, the court said:

"That plaintiff rendered no service during the times for which he now seeks recovery is conceded. If instead of a "substitute" plaintiff's work had been done by a "temoprary," "provisional," or "emergency" employe, would his claim to "back pay" be tenable? Of what importance, then, is the mere name given to the one who took his place? We should look to the substance rather than to the label, since ascertainment of the legislative intent is the aim, and the construction to be adopted and used must be reasonable—such as the chosen language will reasonably bear. Questions involving government must not be determined along technical lines, but rather upon "broad and practical considerations."

According to a decision rendered in May, 1942, by a Minnesota higher court, the owner or occupant of a building owes no duty to keep it in a reasonably safe condition for members of a public fire department who might, in the exercise of their duties, have occasion to enter the building.

Injury in Buildings

For example, in Nulcrone v. City of St. Paul, 4 N.W. (2d) 97, reported June, 1942, it was disclosed that a captain in the Bureau of Fire Prevention, and a long-time member of the St. Paul fire department, was injured as he was going down an inside back stairway leading from the main floor of a store to the basement. He had been directed to inspect the premises as fire inspector pursuant to the re-

quirements of a city ordinance. The stairway was defective as one of the trends, about midway between the top and bottom, was dangerous. The captain stumbled and fell, receiving serious injuries. He sued the property owner for damages. The higher court refused to allow damages, and said:

"As to policemen and firemen, by the great weight of authority, the general rule is that, absent statute or ordinance, one who comes upon premises in the discharge of his duty, but without an express or implied invitation to enter, is a licensee to whom the owner or occupant owes no duty except to refrain from injuring him wilfully or wantonly and to exercise ordinary care to avoid imperiling him by any active conduct."

Review of 1942 Pension Cases

Few higher courts have granted pensions to firemen disabled while off duty. However, a recent higher court granted a pension under these circumstances.

For instance, in Burns v. Amrine, 131 P. (2d) 884, reported December, 1942, it was shown that a fireman had served continuously for 17 years and approximately 5 months before his retirement because of permanent disability after he was more than 50 years of age. He had paid membership fees to the Firemen's Pension Fund since it was organized. His disability was not connected with his employment as a fireman. However, the higher court granted him a pension, and said:

"Can the board of trustees be compelled to grant and pay the pension in this particular case? Having concluded, as a matter of law, that service-connected disability is not made a pre-requisite to relief by the particular provision of the statute now under scrutiny, it follows the writ was properly allowed."

In Burns v. Police and Fire Pension Commission of Orange, 27 A. (2d) 11, reported August, 1942, it was shown that a state statute provides for pensions of members of the fire department who have paid into the fund the full amount of his annual assissment and continues so to do after his retirement.

The higher court held that the deduction for pension purposes of a retired officer was to be computed on the basis of his active yearly salary at time of his retirement, and not on the amount of pension being paid to him in retirement.

However, in Burns v. Police and Fire Pension Commission of Orange, 29 Atl. (2d) 848, reported January, 1943, the higher court reversed this decision and held that the deduction for pension purposes of the retired officer should be four per cent of the amount of pension paid to him in retirement and *not* four percent of the salary before retirement.

In Wagner v. Holmes, 5 N.W. (2d) 513, reported October, 1942, the higher court held that a state law providing for the establishment of a system of pensions for members of fire departments and which prescribes the manner of adoption as "provided by law for amending charters," required only a majority vote for passage when that was all that was required for adoption of charter amendments.

In City of Fort Worth v. Morrison, 164 S.W. (2d) 771, reported October, 1942, the higher court held that a city by simply failing or neglecting to pass an ordinance or resolution, in the manner provided for by the city's charter, can not defeat the right of any fireman to a pension who was actually hired by and who became a part of the Fire Department of such city, regardless of the manner in which such department was created by the city.

In State Kirby v. Board of Fire Com'rs of city of Hartford, 29 Atl. (2d) 452, reported November, 1942, the higher court held that although a regular member of a municipal fire department was suspended because criminal charges had been preferred aginst him, he was still a "member of the department" and having been a member for more than 25 years and having paid all assessments levied against him for the firemen's relief fund, he was eligible for retirement.

In Burdett v. Municipal Employes Pension, 28 Atl. (2d) 93, reported September, 1942, a state law was construed by the court. This law provides that no pension shall be paid to a "widow * * * if she * * * was married to her * * * deceased spouse after the date of * * * his retirement or after * * * he shall have reached fifty-five years of age."

The court held that a widow was entitled to receive payments of a pension although she married the fireman after he was 55 years of age. However, she married him before the original pension law was passed.

In Knoll v. City of Los Angeles, 132 Pac. (2d) 203, reported December, 1942, the higher court held that a person employed by the Los Angeles fire department to keep record of fires, make reports, etc., entitled to a pension under a charter provisions for pension to "members of fire department." The court said:

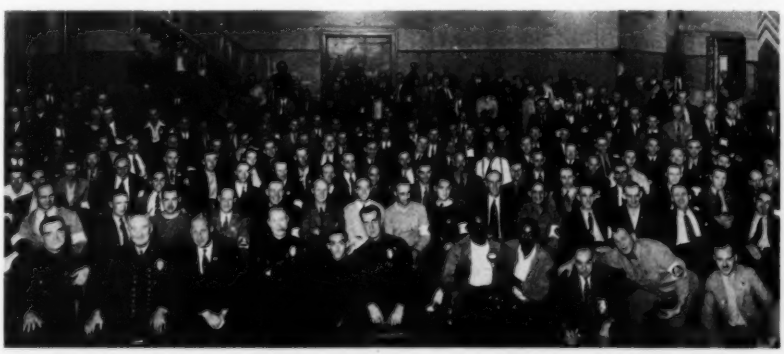
"Under the test laid down in the charter, therefore, petitioner was entitled to share in the provisions of the pension plan as a member of the department.

In Thompson v. Civil Service Commission, 134 Pac. (2d) 188, reported February, 1943, it was shown that a fire chief was appointed by the city commission without regard to civil service.

It is important to know that this higher court held the rules of conduct prescribed for civil service employes had no application to the chief, and that he was not subject to discipline or penalty for violating such rules.

Salary Bill Up Before House of Representatives

Through the efforts of the Federal Uniformed Firefighters Association a bill, H. R. 2565, has been introduced in the House of Representatives. The bill calls for increases for all fire fighters in Federal employment.



Denver Auxiliaries Hold Social Evening

At the left may be seen Captain John T. Horan, Instructor; Chief John F. Healy; Robert J. Kirschwing, Manager of Safety; Assistant Chief James L. Cain, Drillmaster in charge of auxiliary training, and Engineer Chester Block of Engine 20, as they attended the social get-together of the Denver, Colo., auxiliary firemen on September 15.

Practical Training for Auxiliary Firemen

By FRED SHEPPERD
Editor, FIRE ENGINEERING

IN this installment of the series of articles on "Practical Training for Auxiliary Firemen" are discussed fire streams.

Q. What limits the size of a stream which may be taken from a hose layout at a fire.

A. Several factors limit the size of the stream which may be secured from a given layout. The principal ones are: the size of the engine, the length of the line (or lines), the diameter of the hose and the type of layout.

Q. In what way does the size of an engine limit the size of the stream?

A. The discharge of a certain number of gallons per minute at a certain pressure represents a definite amount of work. If the fire engine's power is less than that represented by the discharge and the pressure, then the engine cannot carry the load. For example, when a fire engine is discharging 800 gallons per minute at 100 pounds pressure, the water horsepower is 46.65. If a motor which drives the pump on the fire engine cannot deliver this amount of power, then it cannot provide 800 gallons per minute at 100 pounds pump pressure. Thus the size of the engine has a very material effect upon the maximum size of stream and the pressure at which the stream is discharged.

Q. In what way might the length of a line of hose limit the size of stream delivered through it?

A. The length of a line of hose has a direct bearing upon the quality of stream delivered by the nozzle attached to the line. If the line is of great length, the friction loss may be so large as to reduce the nozzle pressure to an ineffective figure. For example, if a pumper is delivering water through a 1200 foot line of 2½-inch hose, equipped with a 1¼-inch nozzle, and if the engine pressure is 253 pounds per square inch, the nozzle pressure will be only 35 pounds. If the engine pressure cannot be increased, due to the limitations of the pumper, or if the hose near the pumper can not stand a pressure greater than 253 pounds, it will not be possible to increase the nozzle pressure by increasing engine pressure.

On the other hand, if this line were 700 feet in length, an engine pressure of 228 pounds would give a nozzle pressure of 50 pounds, which is satisfactory for this size nozzle. Thus the length of a line of hose has a very material bearing upon the stream it is capable of delivering.

Q. In what way does the diameter of hose line affect the stream delivered from the nozzle attached to it?

A. The larger the diameter of hose, the less the friction loss and therefore the higher the pressure at the nozzle for a given engine pressure. As an example, if we have a 1,000-foot stretch of 3-inch hose, fitted with a 1¼-inch nozzle, and have a pressure at the engine of 163 pounds, we will have a nozzle pressure of 55 pounds. If this 1,000-foot line is changed to 2½-inch hose, but the 1¼-inch nozzle is still retained, then with an engine pressure of 163 pounds we have but 26 pounds at the nozzle. Thus the use of 3-inch hose over 2½-inch means the difference between an effective stream and an ineffective one. Hence the diameter of the hose has a very material effect upon the quality of the stream delivered.

Q. How does the type of layout affect the quality of the stream?

A. The type of layout has a material effect on the stream produced. If parallel lines, for instance, are used instead of a single line, the result may be the difference between a good and a poor fire stream. As a specific example, assume that a stretch of 1,000 feet is needed. In one case we employ two parallel lines of 2½-inch hose siamesed into a 1¼-inch nozzle. With an engine pressure of 150 pounds, we have a nozzle pressure of approximately 50 pounds. And now if a single stretch, 1,000 feet long, and equipped with 1¼-inch nozzle were used instead of the parallel lines, in order to get 50 pounds at the nozzle, we would require 303 pounds at the engine? Or if the engine pressure remains unchanged, that is, were kept at 150 pounds and a single line were used, we would have only 24 pounds at the nozzle. Thus the difference between having parallel lines and a single line is the difference between 50 pounds and 24 pounds at the nozzle, or the difference between a good and a poor stream.

Q. What is friction loss in hose and how is it caused?

A. Every fluid, including water, offers some resistance to change in shape on account of its internal friction and, in addition, resistance to flow when in contact with the walls of any conveyor. This resistance to change of shape and resistance to flow caused by the lining of the hose results in a loss of pressure within the hose. This pressure loss is commonly termed friction loss.

For example, if a pumper is pumping through a line of hose of 2½-inch diameter, and flow is 220 gallons per minute, 12 pounds pressure will be lost for each hundred feet of hose in the line. Should the engine be operating at 200 pounds pressure, then the pressure in the hose 100 feet from the engine would be 88 pounds; 200 feet from the engine, 76 pounds, and so on.

Q. What effect has a change in flow through a line of hose upon the friction loss produced?

A. In a given line of hose, the friction varies approximately as the square of the discharge. For example, if a line of hose were carrying 200 gallons per minute, the friction loss would be 10.1 pounds per hundred feet (this is for 2½-inch hose). Now if the flow were

A Battery of Powerful Streams, Showing Good Pressure and Caliber

doubled, or made 400 gallons per minute, the friction loss would be 2 x 2, or four times as much, or 40.4 pounds per hundred feet. Should the flow be tripled, or made three times as much, then the friction loss will be 3 x 3, or nine times as much.

This Stream Would Be More Effective if It Were of Larger Diameter and if Pressure Were Greater

Q. What relation has the length of a line of hose to the friction loss therein?

A. The friction loss in a line of hose varies directly as the length. Thus the friction loss in 200 feet of hose will be twice as much as in 100 feet; the friction loss in 300 feet will be three times as much as in 100 feet, and so on.

Q. What bearing has the diameter of a hose line upon the friction loss caused by a given flow?

A. For a given flow, the friction loss varies inversely as the fifth power of the diameter of the hose. As a specific example, for the same flow and the same length of line, the friction loss in 2½-inch hose is 2.6 times that in 3-inch; the friction loss in 2½-inch is 5.8 times that in 3½-inch; or 3.6 times that in parallel lines of 2½-inch hose. It will thus be seen that as the diameter of the hose is increased, the reduction in velocity of flow will mean a very marked reduction in friction loss. The figures below show specifically the great saving in friction loss accomplished by using larger diameter hose:

Flow	Friction Loss in Lbs. Per 100 Feet		
G. P. M.	2½-in.	3-in.	3½-in.
200	10.1	3.9	1.8
300	21.2	8.2	3.7
400	36.2	14.1	6.3

Q. Has the pressure within a line of hose any effect upon the friction loss for a given flow?

A. No, the pressure within a line of hose does not affect the friction loss provided the rate of flow does not change. For example, if at a certain point in a line of hose the pressure is 200 pounds while water is flowing, and this pressure is raised to 300 pounds without the rate of flow being changed, the friction loss per 100 feet will remain the same. It is only when the flow changes that the friction loss changes.

Q. What is the friction loss in hose lines for common sizes of nozzles and commonly employed pressures?

A. The table below gives the friction loss per hundred feet of 2½-inch hose for various flows and various nozzle diameters and pressures.

Size of Nozzle	Nozzle Pressure P. S. I.	Flow in P. P. M.	Approx. F. L. (Lbs. Per Sq. In.) Per 100 Feet of 2½-In. Hose
1 -inch	30	162	7
"	40	187	9
"	50	209	11
"	60	229	13
1⅛-inch	40	237	14
"	50	265	17
"	60	290	19
1¼-inch	40	292	20
"	50	326	24
"	50	357	30

When calculating necessary engine pressure for a line of 2½-inch hose equipped with 1-inch nozzle, we may assume that the friction loss is 10 pounds per square inch where a satisfactory nozzle pressure is being used.

For 1⅛-inch nozzle, we may assume an average friction loss of 15 pounds per 100 feet, and for 1¼-inch nozzle, 25 pounds per hundred feet of 2½-inch hose.

Q. If you are not getting a satisfactory pressure at the nozzle, what may be the cause?

A. Unsatisfactory nozzle pressure may be caused by too low an engine pressure, too large a nozzle, or an improper layout.

Q. In what way would too low an engine pressure affect the nozzle pressure?

A. Too low an engine pressure would mean too low a nozzle pressure. Assume for instance that we have a 1,000-foot line of 2½-inch hose fitted with a 1⅛-inch nozzle. The engine pressure is 115 pounds. At this pressure, we would have a nozzle pressure of only 25 pounds.

And now were the engine pressure increased to 222 pounds, we would have 50 pounds pressure at the nozzle without changing the layout in any respect. Thus in this particular example, the unsatisfactory nozzle pressure in the first instance was due to insufficient engine pressure.

Q. In what way would too large a nozzle affect the nozzle pressure?

A. Too large a nozzle on a line of hose will result in ineffective nozzle pressure because the large nozzle permits too great a flow of water which in turn creates too great a friction loss. The engine pressure minus the friction loss will give the nozzle pressure, where the line is laid horizontally. If the friction loss is excessive, when we subtract this friction loss from engine pressure we have insufficient pressure at the nozzle. As a specific example, assume that we have an 800-foot line of 2½-inch hose equipped with 1¼-inch nozzle. The engine pressure is 236 pounds. The nozzle pressure will be only 25 pounds. Were the engine pressure raised to 300 pounds pressure (provided it could produce that pressure) the nozzle pressure would still be only 33 pounds.

If we reduce the nozzle diameter to 1¼ inches, then an engine pressure of 253 pounds would give 50 pounds at the nozzle, which is a satisfactory nozzle pressure.

Incidentally, on long stretches, where nozzle pressure is unsatisfactory, it can usually be made effective by cutting down the size of the nozzle.

Q. How may one determine the proper size of nozzle to be used on a line of hose without actually trying out the layout?

A. The following rules will aid in determining the proper size of nozzle to use for different hose layouts:

1. Where plain nozzle is to be employed on a long stretch, the nozzle should be the second size smaller than one-half the hose diameter, i.e., for a long stretch of 2½-inch hose, use a 1-inch nozzle.

2. When plain nozzles are to be used on medium stretches their diameters may be made the size next smaller than one-half that of the hose: i.e., on a 3-inch line of medium length, the nozzle should be 1⅜ inches diameter.

3. When plain nozzles are to be used on short stretches, their diameters should be made one-half the hose diameter, i.e., for a short stretch of 2½-inch hose, the nozzle diameter should be 1¼ inches.

As a general rule, nozzles must not exceed in diameter one-half the diameter of the hose used.

A short stretch is usually taken as six lengths or thereabouts; a medium

(*Continued on page* 718)

These Fire Streams Are Poor Because They Lack Solidity and Stiffness

WASHINGTON AUXILIARY FIREMEN SET RECORD IN DEMONSTRATION

Four Hundred Auxiliaries Take Part; Succeed in Raising 100 Foot Water Curtain

THE auxiliary firemen of the District of Columbia set a national record Sunday, October 3, 1943, when they manned and operated 100 auxiliary fire pumps allocated to the District by the United States Office of Civilian Defense, raising a water curtain approximately 100 feet high by over 700 feet long at the Tidal Basin, in the nation's capital.

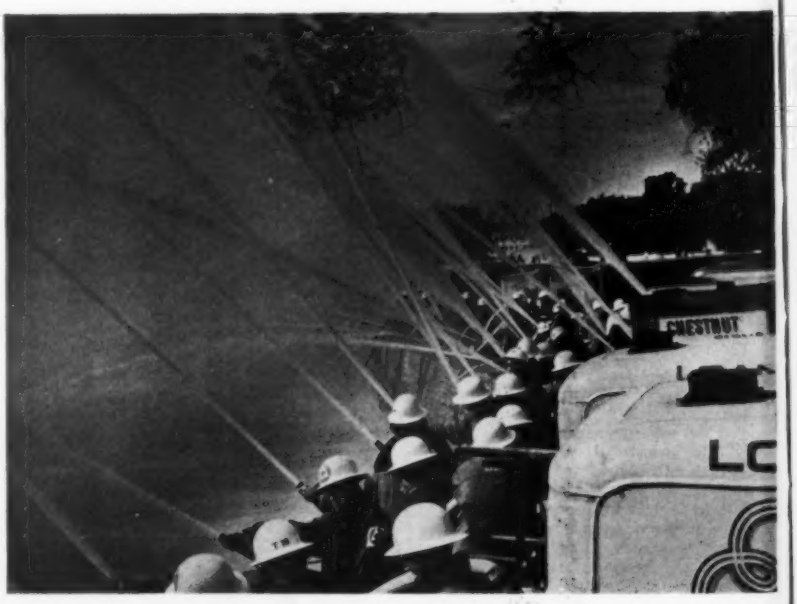
The 400 auxiliaries, workers in Government, business, finance and other professions, who have each devoted 150 leisure hours to learning the rudiments of fire fighting, stood staunchly by their humming pumps—sixty-nine of which were the trailer type, the balance, thirty-one, being skid pumps mounted on a wide array of motor vehicles bearing the names of Washington's most famous department and other retail stores, milk and bakery companies and the like. Each piece bore its auxiliary number, and the skid-mounted trucks proclaimed the names of the donors, as well as the fact that the units were part of the civilian defense of Washington. Each piece had its crew, clad in white helmets, high rubber boots and blue coats. Some of the pumps operated three hose streams. The total water pumped at the peak of the forty-minute demonstration considerably exceeded 50,000 gallons per minute or twenty-five tons—a veritable young Niagara.

An estimated throng of 5,000 spectators viewed the operations, among them being Major General John T. Lewis, Commanding General of the Washington Military District; Lt. Colonel Leonce Legendre, executive officer of the Washington Regional OCD; H. C. Whitehurst, Civilian Director of the District of Columbia; Chief S. T. Porter and Battalion Chief C. S. Peterson of the District Fire Department, the latter in charge of Auxiliaries; Dr. David Price Principal Chemical Engineer of the Department of Agriculture; Frank C. Hanrahan, County Manager of Arlington County, Virginia, together with officials of the National Office of Civilian Defense and fire chiefs and members of fire departments throughout the Regional area. Some of these neighboring departments drove their own apparatus from considerable distances so that it could be exhibited although the Regional fire forces will conduct their own mass exhibition at a future date.

During the demonstration, an opportunity was afforded spectators to witness rescue work of the auxiliaries and the regular Fire Department when two casualties had to be treated at the scene. Auxiliary Gerald F. Van Pelt suffered several fractured ribs when a high pressure stream got out of control necessitating his removal to Emergency Hospital. Fellow Auxiliary Fireman Lt. Nestor F. Delevaux was tossed over a railing into the Tidal Basin, when he lost control of a hose line. He was promptly rescued by his mates, little the worse for submersion.

Besides raising the huge water curtain, which Chief Peterson claims "nobody is going to beat for a long time," three auxiliary companies which are sponsored by the Washington Gas Light Company under command of Chief H. L. Leonard, demonstrated a three trailer pump relaying hook-up, somewhat similar to the operations adopted by the British fire service during the blitz. Auxiliaries of another company—No. 9—executed their weekly drill evolutions under command of Lt. A. M. Grunwell of the Second Battalion; this included the use of spray nozzles, and large streams. The toughest part of the entire test came when the fire fighters had to pick up and replace all the thousands of feet of hose, together with the nozzles, play-pipes, and other accessories, and get their apparatus back to quarters, ready for emergency use.

Some of the Skid Pumps Mounted in Delivery Trucks Loaned by Retail and Other Establishments of the District of Columbia



Auxiliary Fire Trucks of the District of Columbia Participating in the Mass Demonstration at the Tidal Basin on October 3

NORFOLK AUXILIARY FIREMEN HAVE ACTIVE ORGANIZATION

Competitions Held to Maintain Interest of Auxiliaries; Members Secure Trucks for Installation of Pumps

PUSH, perseverence and patience have finally won out in the Norfolk, Virginia, Auxiliary Fire Force. After a year and seven months of training and of seeking equipment and material, this division of the Office of Civilian Defense has, through its own efforts, obtained and equipped eleven pumpers.

The OCD has given much equipment to the fire-fighters, including pumps, hose, ladders, gas masks, helmets, coats, shovels, ceiling hooks, axes and other necessary items. However, the trucks themselves were begged, bought or borrowed, were re-built and made ready for the installation of the pumps, completely through the efforts of members of the Auxiliary Fire Force.

The idea of organizing a number of companies of volunteer smoke-eaters was mulled over and discussed at great length by Richard M. Marshall, Co-Ordinator of Civilian Defense in Norfolk, and Fire Chief Edw. J. Cannon, who has been vitally interested. Henry Cowles Whitehead was appointed chief of the civilian defense unit.

Organized December 30, 1941

The Norfolk Auxiliary Fire Force was organized on December 30, 1941, after many weeks of planning on the part of Chief Whitehead and Deputy Chief R. L. Woolard, of the Norfolk Fire Division, in whose hands the training of the volunteers was placed. At the organization meeting, 270 men and one woman were enrolled. Training began on January 7, 1942. Two drill periods were established at each of the 11 regular fire stations in the city. Permission to use antiquated pieces of regular equipment to drill on was granted by Chief Cannon.

Training on city-owned pumpers was continued until the spring of 1943. Captains in the Norfolk Fire Division served as teachers at weekly schools and supervised drills.

The greatest problem faced by the amateur smoke-eaters was maintaining interest at a high enough level to keep the ranks of the force intact while awaiting equipment. The draft, too, caused havoc among the members, but at least one active company was kept at each station at all times. When trucks were finally obtained interest mounted rapidly and the volunteers found the drills and schools of greater interest than ever before.

In April, 1942, a company of colored auxiliaries was formed and in May a telephone system was set up so that Chief Whitehead could notify his men with a minimum of wasted time and effort in case of any type of emergency.

In order to bolster up the flagging interest of most of the volunteers who found that the same drills and schools repeated over and over on equipment which they could never actually use was rather boring, Chief Cannon, Deputy Chief Woolard, and Chief Whitehead arranged for competition between stations. The contest lasted through July and was won by Station No. 6. Old pieces of regular fire-fighting equipment were used. A silver cup was awarded to the winners.

The first equipment obtained by the OCD for the smoke-eaters was a batch of arm bands, distributed on September 30, 1942. The first shipment of OCD pumps had arrived in August but as there were no trucks on which to install them they were not issued.

In October, Station No. 12 started the ball rolling by making plans to beg or buy a truck of its own. Other stations soon followed suit. On November 17 a mass meeting was held at which time plans for obtaining more equipment were discussed and diplomas were awarded to 175 fire-fighters who had attended schools and drills regularly and were, in the opinion of the regular captains, qualified to be considered "graduates." While the meeting was in progress a three-alarm fire was broadcast and most of the "graduates" assisted the regulars at the down-town blaze.

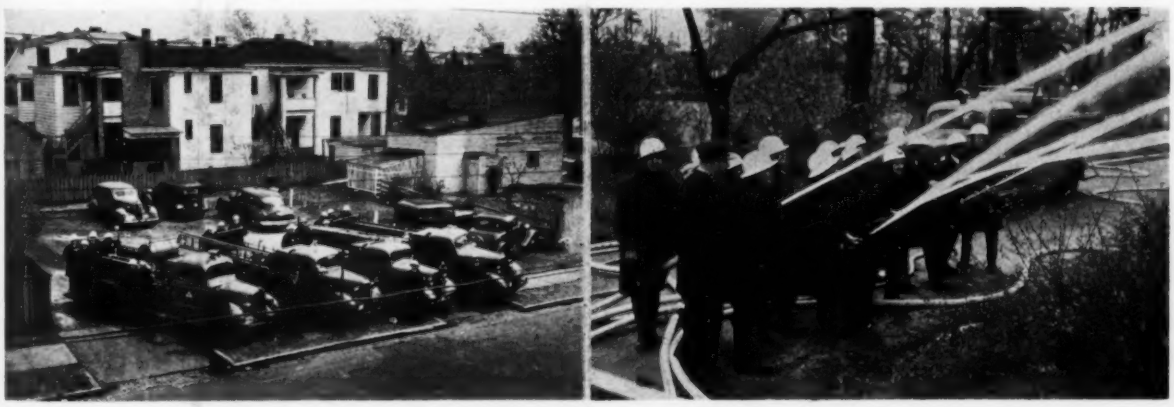
In January 1943 a shipment of ladders arrived from the OCD. In March helmets and gas masks were issued. In April the volunteers placed four trucks in commission and during the latter part of that month and in May five other trucks were completed. At present we have eleven trucks completed, these trucks secured as shown below:

Auxiliary Equipment

No. 3—Donated by Coca-Cola Bottling Works
No. 5—Secured by members of Company
No. 8—Secured by members of Company
No. 12—Secured by members of Company
No. 1—Donated by Nehi Bottling Works
No. 2—Secured by members of Company (Colored)
No. 7—Donated by Nehi Bottling Works
No. 4—Donated by City of Norfolk
No. 6—Purchased by members of Company
No. 11—Donated by City of Norfolk
No. 12—Donated by City of Norfolk

Manual on Rescue Work

A 126-page manual entitled "Field Care and Transportation of the Injured" has been published by the Medical Division of the Office of Civilian Defense. Designed for the training of rescue workers, medical auxiliaries, ambulance drivers and attendants and stretcher bearers, it contains chapters-on organization and operation of the various units, general instructions, principles of bandaging injuries and conditions encountered in air raids and other wartime disasters, marking of casualties and disposal of the dead, methods of blanketing a casualty, methods of lashing a casualty to a stretcher, stretcher transportation, carrying casualties without stretchers and ambulance transportation.



Apparatus of Norfolk Auxiliary Fire Department
Left: Four of the pumpers equipped by the members. Right: Testing apparatus.

SAN DIEGO SOLVES PROBLEM OF MOUNTING O.C.D. PUMPS

Fire Department Shop Does the Work With Salvaged Automotive Equipment

By Floyd McCracken

FEW problems have presented such a nation-wide challenge to Yankee ingenuity as that of how best to mount the skid-type pumper units supplied to communities by the Office of Civilian Defense.

The problem would have been fairly simple before priorities took a firm grip upon transport equipment and machine-shop supplies; it became very complex when department heads had to prowl through junk heaps to salvage bits of trucks that would be pieced together to carry a pumper.

San Diego's fire department went through all the agonies attendant upon solving the problem. It finally emerged from the struggle with four pieces of equipment of which it is especially proud. In addition to a fleet which includes built-over passenger cars and trucks resurrected from junkyards, the city has a quartet of streamlined "cab-over" trucks for use by its auxiliary firemen.

These trucks were acquired from a bakery at an advantageous price. They are of 1½ tons capacity and are built for dual tires, if need arises.

When first acquired these four trucks were arranged to carry bakery goods. Elaborate stainless steel shelves and refrigeration equipment were removed. The wide rear door permitted easy installation of the pumper unit. There is ample room in the truck for all the hose supplied with the pumper, and for the other equipment that must be carried, except the suctions and the ladders.

The suctions are carried at the top of the truck, one along either side of the body. A rack on top mounts the 24-foot extension ladder and the 12-foot roof ladder.

Four men, including the driver, can ride in the cab. Here they find good protection from traffic hazards, and from the threat of falling from the truck while enroute to a fire.

These trucks have a further virtue in that they will be useful in some other branch of municipal service after the war. It is believed that they will be splendid vehicles for use of city electricians.

All work of conversion of these trucks, as well as the others assigned to the OCD auxiliary firemen, was done in the city's shops under direction of John Seuss, superintendent.

Fire Chief John E. Parrish early insisted that a standardized arrangement be worked out for mounting auxiliary fire fighting equipment on trucks. He wanted spanners always to be in one location. Nozzles should be arranged in a uniform manner. Hose should be stowed in precisely the same manner on every piece of rolling equipment, including the new streamliners. Chief Parrish foresees the possibility that volunteer firemen may in an emergency be assigned to work on pumper units which they did not use in their training. A standardized plan, he believes, will avoid possibility of confusion.

All OCD trailer and skid-type units allocated to San Diego are kept at the regular fire stations. Most are stored outside under heavy tarpaulins. Regular firemen are responsible for keeping tire pressure up, batteries charged and gas tanks filled. Proximity of the equipment to the fire stations guarantees protection of the property, and it makes the pumpers available for use by the auxiliary firemen in their practice sessions. This factor has enabled the regular fire department to maintain close contact with the volunteer group and to integrate volunteer training with that of the department.

Photo by Capt. Al Penros

This Handy "Cabover" Type of Truck Will Carry a Skid-Type Pumper, a Crew of Four Men, and Will Tow a Trailer-Type Pumper

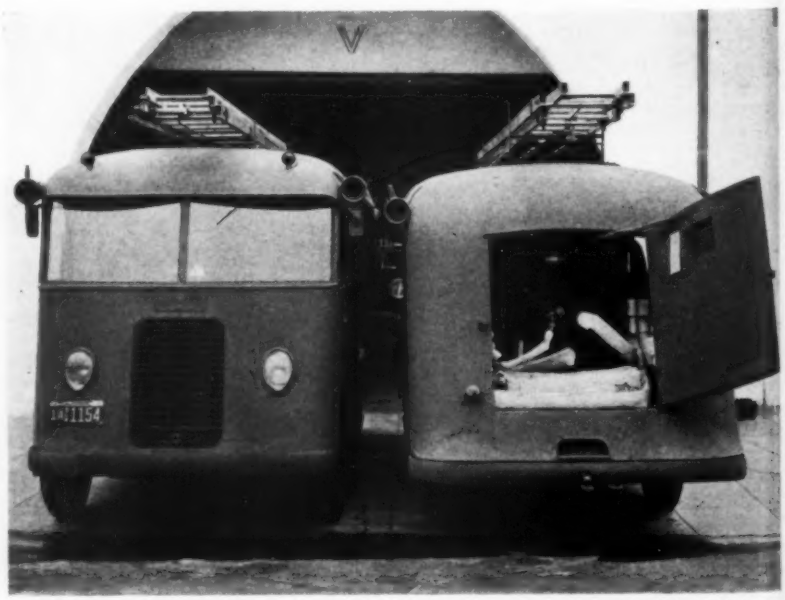


Photo by Capt. Al Penrose

The "Fore and Aft" Appearance of San Diego's Streamlined Fire Trucks for OCD Volunteers

CANADIAN FIRE FIGHTERS AID IN PROTECTING GREAT BRITAIN

Corps of 400 Men Organized in Canada; Given Training by National Fire Service

By S. H. Cooke

CANADA is spending $957,850 this year to support overseas a worthwhile corps of which she is proud. The origin and organization of the corps and the work they are doing in Britain, is not without points of interest.

A corps of fire-fighters was asked for by the government of the United Kingdom. After Canada had discussed the matter at some length with the National Fire Service of the British Isles it was decided that a corps of 400 men, all ranks, would be organized in Canada and sent to the United Kingdom to assist the national fire service.

The need for such a corps at that time of course was due to the numerous and terrible bombing raids by the German air force which was committing horrible atrocities upon many of the large cities and the countryside of Great Britain.

The formation of the corps was authorized in March, 1942, and the first detachment left Canada in May of the same year. Subsequently, as accommodations were available, other detachments followed, and the entire corps was in the British Isles last year.

How the Corps Was Recruited

This corps was recruited with the assistance of the fire chiefs of Canada, who took a paternal interest in it because of their profession.

About two-thirds of the men had had practical fire-fighting experience in Canada, and the majority of that two-thirds were members of permanent fire-fighting brigades. A number of men were members of volunteer fire-fighting brigades which are to be found in some of the provinces of Canada. The training that these men had obtained stood them and the corps in good stead. Before these men left Canada great care was taken to make certain that each individual was trained to look after himself and that he was fully aware of the danger into which he was going.

Course of Training

Each man received instructions on gas protection and other matters. The perils of the voyage across the Atlantic and what life in Great Britain meant was explained to each member of the corps, so that no member of it would suffer because of ignorance of what he might be subjected to.

When they arrived in Great Britain they were sent immediately to a pool operated by the National Fire Service and put in a month's training at a school operated by that service. Then followed a period of four months when the men were placed on active service in National Fire Service stations throughout the British Isles. In this way the men obtained practical experience. When all of the members had received this training on the ground under the supervision of the National Fire Service, action stations were allotted to the Canadian fire-fighting corps. The men are now scattered among four stations in Great Britain located at points where the danger is the greatest. Fortunately they have not been under fire very often because the raids have diminished. But they have done their duty and have shown the benefits of their training. Friendly competitions have been held between the two services in the laying of hose, raising of ladders and other exercises.

If the members of this corps are injured or killed, they or their dependents receive the identical benefits as paid to members of Canada's armed services overseas in similar circumstances. Their pay is also exactly the same as similar ranks in the army; pension will be likewise. The Canadian boys are and have been stationed for many months in some of the worst spots in the British Isles, those most exposed to possible enemy action.

A total of 107 municipalities supplied the 400 members of the corps. From Nova Scotia, five, Prince Edward Island, three; New Brunswick, four; Quebec, 30; Ontario, 287; Manitoba, 27; Saskatchewan, 22; Alberta, 12; and British Columbia, 32.

Canada will never forget the fact that these men volunteered for a service considered then to be as dangerous as that performed by any human being in the British Isles, whether in uniform or not. Most of the members of the corps were members of city fire brigades, and with the experience they have gained in Great Britain it is thought that when they return they would make splendid fire chiefs in a great many of our cities in the future.

Chief Huff, who was formerly the officer in command of one of the fire-fighting corps of the Royal Canadian Air Force, now commands the Canadian Fire-Fighters Corps. The Royal Canadian Air Force has its own fire-fighting organization, with different ranks. Before that, Chief Huff was fire chief of the city of Brantford, Ontario, and a very efficient fire chief there, as instanced by the great success of his brigade in competition with those from other cities all across Canada and the United States. He has had a remarkable record of success in efficiency of performance.

What will be done with this corps now and at the end of the war? This is a matter that has received and is receiving consideration. This does not mean that Canada is necessarily going to disband this corps. Should the fire-fighting services of Great Britain advise the Canadian authorities that action of the kind that existed when this corps was formed is still probable it may be necessary to consider taking some action but it is too early at this time to say that the danger is over although, happily, it is greatly diminished.

It is safe to say, however, that these boys will turn up in some other arena of war where the sparks are flying the thickest.

Authority to Return to Fire Chief After War

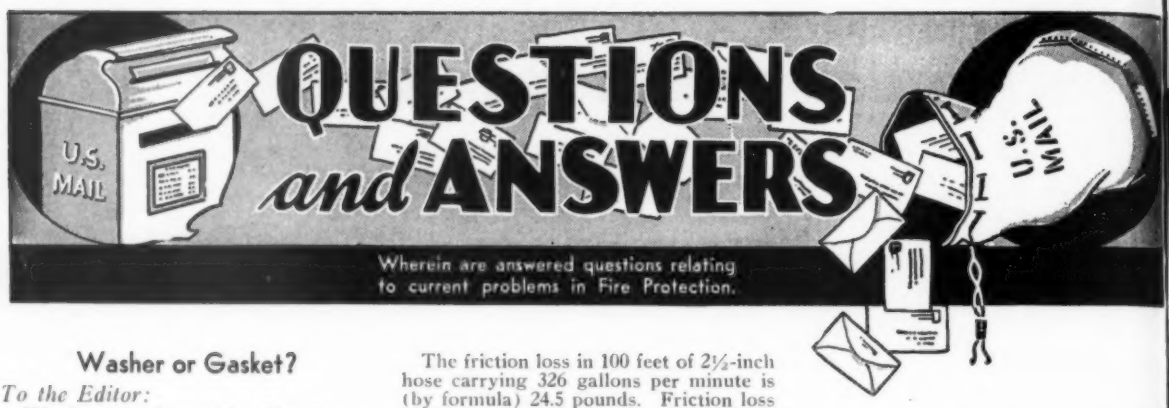
John Alderson, chief engineer of the Los Angeles Fire Department, recently told 300 delegates to the California State Firemen's Association, meeting in Sacramento, that while the war has made it necessary to give mayors and city managers direct control over fire departments the authority should be returned back to department chiefs after the war.

Discussion of fire equipment shortages and of draft deferment for firemen dominated the proceedings of the annual convention.

BOB GREENOCK

New Pumper for Marietta, Ohio

Grouped around their new Buffalo triple combination pumper are members of the Marietta Fire Department. The men on the truck are (from left to right) H. M. Taylor, Larry Davis, H. R. Benson, Assistant Chief R. L. Davis, Theodore Waggoner, Burt Crimmel and C. E. Young. In front are H. K. Wagner, C. O. Thomas, W. D. Murphy, H. A. Barth, C. O. Dutton, Chief D. E. Drennen, Mayor E. D. Schob and Safety Director A. E. Wilking.



Washer or Gasket?

To the Editor:

We have had considerable discussion as to the proper name for the rubber or composition ring that is used between hose couplings to make a water tight joint. Some parties refer to it as a gasket, while others call it a washer. What is your opinion? H. G. C.

Answer: The rubber, or composition, ring that is used between hose couplings in a hose line is commonly known as a "washer." When John R. Freeman made his tests on fire hose in 1889, and published them under the title of "Experiments Relating to Hydraulics of Fire Streams," he referred to the ring as a washer. As Mr. Freeman's work represents the basis on which all modern fire department hydraulics is established, it is believed his designation of "washer" is correct.

However, any circular ringe of rubber, fiber, or other material used to make a ight joint can, in general, be referred to as a gasket. But the usage has apparently established the other name, washer, for the device when employed in connection with hose layouts.

Correct Solution to Complex Layout

In the July issue of FIRE ENGINEERING, under the heading of "Complex Layout," a solution of a problem was offered, which contained some errors.

A number of sharp-shooters among the readers of this journal spotted the inaccuracies, and promptly called them to the attention of the editor. Among those detecting the inaccuracies and reporting them, were the following: Worley E. Huston, of Lancaster, Ohio; Aurelio Montagnino of Brooklyn, N. Y.; J. F. Seagraves of Atlanta, Ga.; and Daniel M. McConnell of Brooklyn, N. Y.

Congratulations to these correspondents, and others who found us wrong! THE EDITOR

And here is the correct solution to the problem.

The discharge from 1¼-inch nozzle at 50 pounds pressure is 326 gallons per minute (table value).

Discharge from a 1⅛-inch nozzle at 60 pounds pressure is 290 gallons per minute (table value).

The friction loss in 100 feet of 2½-inch hose carrying 326 gallons per minute is (by formula) 24.5 pounds. Friction loss in 200 feet would be twice as much or 49 pounds.

Friction loss in 100 feet of 2½-inch hose carrying 290 gallons per minute is (by formula) 19.72 pounds.

Friction loss in 250 feet is 2½ times as much, or 49.3 pounds.

The discharge pressure at the second engine will be $60 + 49.3$ pounds, or 109.3 pounds. This would mean that the discharge outlet feeding the other line would have to be throttled down to give 99 pounds, which would be the sum of the nozzle pressure, 50 pounds, and the friction loss, 49 pounds.

Next change the parallel lines of 2½-inch and 3-inch hose between the pumpers to a single line of 2½-inch hose. The factor for this conversion is 6.1.

$500 \div 6.1 = 82$ feet of 2½-inch hose approximately.

Flow through this combined line will be 326 plus 290, or 616 gallons per minute.

Friction loss in 100 feet of 2½-inch hose carrying 616 gallons per minute will be 82 pounds approximately.

Friction loss in 82 feet of hose would then be $.82 \times 82$ or 67.24 or 67 pounds approximately.

Then the pressure at the first engine will be $67 + 10 = 77$ pounds, where 10 pounds inlet pressure is allowed for supplying water to the second pumper.

How Doubling of Discharge Affects Pump Pressure

To the Editor:

At a recent examination the following problem was given. How would you answer it?

If you were working with a fire stream of 200 gallons per minute supplied by a pumping engine operating at a pump pressure of 100 pounds per square inch, what would your pump pressure have to be to provide for a discharge of 400 gallons per minute using the same layout of hose and nozzle? Work out an assumed layout and show all your details.

A. J. K.

Answer: The problem you give is a very unusual one, for nozzle diameter, nozzle pressure and the layout are not given.

As the problem states that the candidate is to work out the assumed layout, the following solution is based on that requirement.

As the nozzle is to discharge 400 gallons per minute, the smallest size acceptable would be 1¼-inch, because a 1⅛-inch would require 115 pounds at the nozzle to give 400 gallons per minute, while the 1-inch would require nearly 180 pounds.

Therefore we will assume that the nozzle is 1¼ inches in diameter.

We must find what length of hose there is in the line, assuming that it is a single line of 2½-inch hose.

Before we can do this we must know the friction loss and the nozzle pressure. The friction loss per hundred feet of 2½-inch hose carrying 200 gallons per minute is equal to $2 \times Q \times Q + Q$, or $2 \times 2 \times 2 + 2$, or 10 pounds.

To find the nozzle pressure, we proceed as follows:

$$\text{Discharge} = 29.7 \times d \times d \sqrt{P}$$
$$200 = 29.7 \times 1\tfrac{1}{4} \times 1\tfrac{1}{4} \times \sqrt{P}$$
$$200 = 46.4 \times \sqrt{P}$$
$$\sqrt{P} = 200 \div 46.4$$
$$= 4.31 \text{ pounds.}$$

If $\sqrt{P} = 4.31$, then P is 4.31×4.31, or 18.576, or 19 pounds pressure approximately.

The friction loss in the line is then $100 - 19$, or 81 pounds (where 100 is the pressure at the engine and 19 pounds the pressure at the nozzle).

As the friction loss per hundred feet is 10 pounds, and the total friction loss is 81 pounds, the length of the line will be $81 \div 10$, or 8 lengths approximately. This will be 400 feet.

The nozzle pressure required to give 400 gallons per minute on a 1¼-inch nozzle is solved as follows:

$$\text{Dis.} = 29.7 \times d \times d \times \sqrt{P}$$
$$400 = 29.7 \times 1\tfrac{1}{4} \times 1\tfrac{1}{4} \times \sqrt{P}$$
$$400 = 46.4 \times \sqrt{P}$$
$$\sqrt{P} = 400 \div 46.4 = 8.62$$

Therefore the nozzle pressure is 8.62×8.62, or 74.3 pounds.

Now we have the nozzle pressure, the length and diameter of line and the size of nozzle. We can then solve for the engine pressure required at the engine to give 400 gallons per minute.

$$\text{E. P.} = \text{N. P.} \times (1.1 + KL)$$
$$= 76.3 \times (1.1 + .248 \times 8)$$
$$= 76.3 \times 3.084$$
$$= 235.3 \text{ pounds per square inch}$$

We believe the examiner would want a fairly practical layout and for that reason we have selected a size of nozzle which would work in this particular case and have assumed a single line of 2½-inch hose, which is common practice.

Our inquiring reporter overhauls the firemanic news of the day

Hot Off the Tape

In Chicago, Rescue Squad No. 4 under Lieut. Matt Scheider worked 15 minutes to revive Carl Z. Rubin, 44, cosmetic manufacturer stricken with a heart attack. Ruben opened his eyes, turned to firemen and murmured: **"Thanks, I feel better now."** Then he fell back, dead. . . . As might be expected, the tragic fire in Houston (Tex.) which killed over 50 is being investigated by "City and State Officials and the National Board of Fire Underwriters." . . . The U. S. Chamber of Commerce, as usual, added its support to Fire Prevention Week drive this year. . . . An extension of the "Big Inch" pipeline broke near Landsdale (Pa.) and oil ran down Skippack creek, was accidentally ignited by a farmer and the resulting fire destroyed over 100 trees. Firemen from six towns erected earthdams, impounded oil, then extinguished blaze with chemicals. . . . When fire broke out at night in camp of Wm. Haskell he and his caretaker escaped because they were awakened by blowing of an automobile horn in the garage. Heat from blaze which leveled the camp, near Peekskill (N. Y.) caused a short which sounded the horn —and alarm. . . . We sure were glad to see those seven Battalion chiefs "made" in New York City just before the list expired. Congrat's—and good going. On, yes, here're their assignments, in case you want to contact them: **Benjamin (Benny) Wells to 5th Batt.; Harry Hertel, 3rd Batt.; Thomas (Tommy) O'Brien, 7th Batt.; Walter Wood, 40th Batt.; Thomas (another Tommy) Loughlin, 25th Batt; James Powell, 37th Batt.; Frank Turner, 17th Batt.** . . . Student firemen John W. Maple, Kansas City (Mo.) F. D. knew how to start his slide down the pole—but mebbe he muffed lesson No. 2. He went to hospital with a sprained knee. . . . During convention of International in Chicago the sympathy of visiting firemen went out to the Windy City Brothers who, with help of workmen, hadda shovel 250 tons of coal to get at smoldering fire which had been smoking at bottom of pile for several days. . . . Not so long ago an oddity in the City of Brotherly Love—Philadelphia (Pa.), was the sight of firemen putting out a fire—of all places—in an ice truck. . . . thanks, E. R., also for the one about James Davis, Secretary of the Boston Board of Fire Underwriters, who received three unusual gifts in honor of his 50 years of service—**one pound each of butter, sugar and coffee!** The dispatching of all emergency ambulances in the District of Columbia is now under the direction of the Fire Department—more headaches for Herb' Friede, Controller of Communications. . . . Folks don't always do what their experience, training and habits would lead you to expect—for instance, the delegate to the postmasters' convention who wanted to mail a letter but who pulled the fire-alarm box by mistake. . . . Year ago when Fire Prevention Week came to Pittsburgh (Pa.) the citizens observed occasion by giving the Brothers a 50 per cent increase in number of fire alarms. . . . In the middle of their benefit picnic, the Baltimore Pike (Md.) Volunteer Fire Company jumped up and ran out on the party—to extinguish flames in a truck. . . . Another "horny" story: in Forest Grove (Ore.) Fred Benefiel was awakened by loud, continuous appeal of his auto horn. He dashed out to find his car afire. He saved four tires. . . . We're late in acknowledging it, but thanks to Raymond G. Lee, Rochester (N. Y.) for item about the Village of Elba (N. Y.), 700, Chief Karl F. Jannain, which completed a full year without a single alarm within the village. The Vamps, however, made two runs to farm fires in the area. . . . Twelve firemen were knocked out in Brooklyn (N. Y.) fighting stubborn 2-hour, 2-alarm cellar fire. . . . There was a fire in the coal bin of Truck 107, Brooklyn (N. Y.), not so long ago for which signal box 1735 was snapped. . . . Speaking of breakdowns of apparatus, they might ration New York a new truck to replace the "spare" that filled in at Truck 8. Three runs in three hours were too much for the old bucket—and the company hadda remain out of service for an hour while the shop emergency crew worked feverishly to restore it to service (J. D.). . . . Ben Ellis the bashful (?) Boston buff, spark and fan was seen and heard at the International Conference. . . . **Captain Ray Milner, Rescue 1, N. Y. F. D., please write R. B. W.** . . . One of the choice bits reclaimed from the capsized Normandie was the floodlight of Truck 24, N. Y. F. D., lost on board, February 9, 1942, the date of the fire. . . . John J. McCarthy, Acting Chief of Department in Charge, New York Fire Department, was feted in honor of his 30 years of service as a fire fighter. Congratulations! . . .

* * *

Everything Happened at This Wedding!

This comes from Palo Alto (Cal.) via E. R., Des Moines (Ia.). It is about the wedding of William M. Miller, Santa Monica, and Grace Harriet Winkler, of Palo Alto (Cal.). As we get it, here's what happened—in part: The maid of honor had to be rushed to the hospital for an emergency operation. A member of the bridal party backed into a waiter while a picture was being taken—and the waiter's tray, laden with brimming champagne glasses, crashed to the floor. A bridesmaid fainted (so would **we** if we'd witnessed that crash!). **The bride's veil brushed a candle and caught fire while the wedding cake was being cut.** Well, the affair went up in a blaze of glory, anyway! We're told the Millers finally got away on their honeymoon!

* * *

Giving Him the Bird?

In Newark (N. J.), so sez the item sent us by Tom Magner, two small boys brought an exhausted pigeon to fire headquarters, and Captain John Moran telephoned the number of a band on its leg to Police Captain Albert Schwankert, a bird fancier. **"Wait until I get my registry book,"** said Schwankert. A moment later, he said, **"I've found the owner—it's me."**

* * *

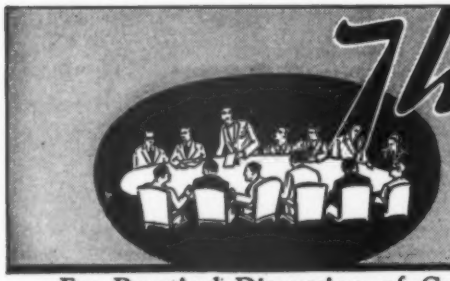
2,000 Gallons of Dynamite—Plus!

A mistake that could have blown the entire 600 block on W. 21st Street, Chicago (Ill.), into next year had the Chicago Brothers all in a dither one day during the International conference in that city. It happened when a delivery truck for an oil company drove up to a trucking company with 2,000 gallons of gasoline to be piped into underground tanks. At the spot one intake goes into the cellar, one into the tanks. Yeah—a new attendant at the garage got the intakes mixed and the gas' went into the basement. The fumes quickly called attention to the error—and the Brothers were summoned on the jump. Were they cautious in siphoning it out? Ask any of 'em, including Batt. Chief James Hughes, who said he wouldn't feel easy until the cellar was washed out clean as a hound's tooth.

* * *

Bees in His Belfry

Our sympathies go out to Fred Knobloch, supervising fire alarm dispatcher of the Bronx (N. Y. C.) Fire Alarm Telegraph Station, located on the edge of Bronx Park. Fred is a quiet, calm, and collected sort of person. One recent dawn, while on duty he was washing up when a Bronx Park Bee, perhaps confused by the lights of the station, nose-dived into Fred's right ear. The fire alarmer was nonplussed, to say the least. In fact, he was right put out! He first tried to gouge the intruder, but the more he gouged the deeper went the bee. Finally he rushed to Fordham Hospital, on the edge of the Park, where a woman interne did her best to oust the critter—but no bee bumbled forth. All the probes in the hospital couldn't extricate Mr. Bee. Almost beside himself from apprehension and shock Knobloch hastened to Union Hospital, the Bronx, and there was told to try his luck at the Bronx Eye and Ear Hospital in Echo Park. Here, fortunately, Dr. Joseph Kennedy, house surgeon, was on the job and he willingly hopped out of bed to meet the emergency. A nurse also responded. Between them they determined the bee was beyond the forceps stage. So a suction pump was utilized. And believe it or not, when the pump was removed from Bro. Knobloch's ear, Mr. Bee buzzed out and disappeared—no doubt headed for his old haunt in Bronx Park. **Imagine a fire alarmer sans ear!** No wonder Fred is grateful as all get-out to the Bronx Eye and Ear Hospital!



The ROUND TABLE

For Practical Discussion of Current Fire Department and Fire Management Problems

RUBBER AND DUCK COATS FOR FIRE FIGHTERS

THE discussion in this round table is a continuation of that which appeared in the October issue of FIRE ENGINEERING on rubber and duck coats for fire fighters.

The generous response from our readers made it necessary to carry the discussion over to this issue.

Readers are invited to send in their comments on this subject or on next month's subject, which appears in the box on the following page. Address communications to Round Table Editor, FIRE ENGINEERING, 24 West 40th Street, New York 18, N. Y.

Discussion of the Topic

Victor H. Veit, Chief, Stamford, Conn.: I favor the use of regulation rubber fire coats in preference to duck or canvas turnout coats for several reasons, all of which reflect my own personal opinion and are not in any way intended to discredit the duck coats.

They are more economical, being only a little more than half the cost of a turnout coat. They slip on over uniform or street clothing more easily. They may be used the year round. In winter they can be put on over a uniform coat, either short or long, very easily. When using the turnout coat the uniform coat must be removed or a feeling of being overdressed is experienced at the slightest exertion.

It is true that there are two distinct advantages that the turnout coat has over the rubber coat, one being that it is much warmer and the other that the turnout coat will better protect the body when either wet or dry from intense heat. But both of these points can be remedied by the judgment of the wearer beforehand when wearing the rubber coat.

Charles E. Lane, Assistant Chief, Great Falls, Mont.: We prefer the canvas turnout coat to the rubber coat because it gives more freedom to work in and isn't so cold in the cold weather. The rubber coats are terribly hot in the summer and cold in the winter.

Frank Pulaski, Chief, Boise, Ida.: I prefer duck or canvas turnout coats. The rubber coats do not protect a fireman from heat and are cold in the winter.

L. A. Moore, Chief, Fresno, Cal.: We favor canvas rubber lined coats. They are much more serviceable in this climate and protect the fireman against the heat of the fire better than regulation rubber coats.

C. L. Bolz, Chief, Pasadena, Cal.: We have always used the duck or canvas turnout coat and have found it to be entirely satisfactory.

Claude Osborne, Chief, Decatur, Ill.: We prefer the regulation rubber fire coat. Regardless of the weather conditions or the number of runs made in wet weather, the fireman always has a dry coat.

L. F. McDonald, Chief, Jackson, Miss.: We have used the regulation rubber fire coat but like the canvas rubber-lined coat much better, for this coat protects the men from heat better than the rubber coat and keeps them more comfortable in the winter months.

George W. Hanen, Chief, New Albany, Ind.: I favor the rubber coat. Even if it does get hot, you have a dry coat to turn out in if you have fires close together. I have seen the canvas coat thoroughly soaked to the rubber lining, making it heavier and stiffer than the rubber coat.

Five minutes in the station house with the rubber coat and it is dry.

E. J. Ryan, Chief, Aurora, Ill.: I prefer rubber coats to duck or canvas ones.

My reason for this is the fact that duck or cloth coats will stiffen and collect ice in cold weather. Rubber coats are much easier to clean after being in some place where they are likely to get dirty.

Henry L. Hilles, Chief, Tucson, Ariz.: We do not use rubber coats but prefer the canvas as the latter have better heat resistance and are warmer in the winter.

W. B. Miller, Chief, Columbus, Ga.: I do not like a coat of any kind in warm weather. I favor the duck or canvas in winter, or rather a full turnout suit. The men like these suits as they are a protection against the weather and water.

Wilson McLaughlin, Chief, Sandusky, Ohio: I prefer the duck or canvas turnout coat to the regulation fire coat for the rubber coat is too cold in the winter and too warm in summer. There also is quite a bit of difference in the weight of the two coats. A heavy coat is bound to be noticed sooner than a light one if the man is wearing it for some period of time.

W. J. Mohr, Chief, Santa Monica, Cal.: We prefer the canvas coat in this part of the country. Rubber is too hot for wearing on all alarms.

One advantage with the canvas coat is that you can keep cool on a small room fire by getting yourself wet, that is, by turning the nozzle to the ceiling.

Canvas coats are warm, but they won't cause you to perspire as quickly as do the rubber coats.

Benjamin L. Chase, Chief, Haverhill, Mass.: The Haverhill Fire Department is almost completely equipped with the safety coat made by the Midwestern Company. Most of the men are well satisfied with it and prefer it to the canvas coat. Two or three men do, however, prefer the canvas coat. The safety coat has white stripes which show up well at night and while working on ladders. It is also lined to protect the men against heat and has a wool lining that snaps in for winter weather. It is long enough to protect the men from getting wet.

As far as we are concerned, the safety coat seems to be the best all around coat and gives the best all around protection of any that we have seen.

Joe Carmichael, Chief, Little Rock, Ark.: We prefer duck or canvas turnout coats because they do not absorb heat and cause neck and wrist burns like rubber; they can be patched, waterproofed and repaired; they are light in weight, flexible and do not slip at the seams and come apart so easily; likewise they are not affected by oils, heat and friction like rubber. In cold weather, duck or canvas will retain body heat and not tend to stiffen and crack.

F. L. Campion, Chief, Fargo, N. D.: From our experiences we have found the regulation rubber coat preferable to the duck or canvas turnout coat.

We have found the average canvas or duck turnout coat too short for the fire service, shedding water into top of boots. If length is added it be-

HERE IS THE QUESTION

Do you favor the use of the regulation rubber fire coats or do you prefer the waterproof duck or canvas trunout coats? What are the reasons for your choice?

REMEMBER WAY BACK . . .

When firemen dressed like this and drove engines like this housed in firebarns like this they dried their hose in towers or cupolas like this . . . .

They did a grand job, too—considering the equipment they had in those days. Hose dried pretty well even in those antiquated towers—BUT—it took days to do it—hours of back-breaking work, too. Those towers were expensive to build and keep in repair, were dangerous fire hazards and architectural monstrosities.

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3. **BURGLAR ALARM:** Electric protection for doors, windows, skylights, safes, vaults, etc. —anti-intrusion protection.
4. **AERO AUTOMATIC FIRE ALARM:** Detects fire at its start, summons fire department.
5. **SPRINKLER SUPERVISORY AND WATERFLOW ALARM:** Automatically detects and reports trouble that might impair sprinkler efficiency, automatically summons fire department when sprinkler heads open.
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AGAINST FIRE · BURGLARY · HOLDUP

A NATION-WIDE ORGANIZATION

comes cumbersome and unwieldy and in time shrinks under fire service conditions. For all around purposes we prefer the regulation rubber fire coat.

Ben J. Zahn, Chief, Ann Arbor, Mich.: Both types of coats are used in our department. The regulation rubber fire coat gives good protection against getting wet, but we find they tear more frequently than the duck coats. When wearing the regulation rubber coat, our men usually wear a light jacket under it, while with the duck or canvas coat, they don't need any.

I have worn both types and don't see too much difference in either type.

C. A. Crosier, Chief, Battle Creek, Mich.: We use regulation rubber fire coats furnished by the city because we consider them better protection from heat and water than the fabric coats. A heavy wool lining is furnished for winter wear.

Thomas W. Hurley, Chief, Northampton, Mass.: We prefer the regulation rubber coats as we feel they are far superior to the duck or canvas coats. Our department uses the rubber coats altogether.

Edward C. Palmer, Chief, Grand Rapids, Mich.: We have always used the rubber coats and thus I am unable to say which would serve the best.

Charles Kuhl, Chief, Sioux City, Ia.: We have used all types of fire coats, but prefer the rubber coat.

We find that the canvas coat gets too stiff in winter. The rubber coat gives us the best service.

W. J. Taylor, Chief, Burbank, Cal.: I hardly feel qualified to discuss the merits of the rubber fire coats and the duck turnout coats because I have never used anything but the regular turnouts.

I do have my opinion, however, which would be in favor of the turnout coat. I believe it gives more freedom of movement and can be adapted better to more conditions. The turnout is warm as well as waterproof and also keeps the heat of the fire out as well as the heat of the body in. It probably will last longer than the rubber coat and stand up under wear and tear better.

M. G. Bennett, Chief, Orlando, Fla.: My department is 100 per cent equipped with waterproof duck turnout coats with a flannel inner lining. The coat also has a rubber lining between the inner and outer covers. This turnout coat is made by the Body Guard Manufacturing Company, and has proven very satisfactory for our needs. Due to its construction it is very efficient in turning water and shielding the wearer from heat.

Edmund B. Lewis, Chief, Scranton, Pa.: The rubber coat and the canvas coat both have their advantages and disadvantages.

The canvas coat which is well lined is the warmer coat for winter use, but it becomes stiff in such weather. The rubber coat, in my opinion, is the best for all year use in a busy fire department.

C. J. Henry, Chief, Lexington, Ky.: The regulation rubber fire coat has not been in use in this department for twenty years. We found that it did not give ample protection from heat or cold. When fighting fire from close range the coat absorbed and held heat causing varying degrees of discomfort to the wearer. Also we found that they were too long and in the way of the men climbing and working off ladders. We also had trouble with them leaking at the arm seams and at the shoulders. Again when the coats were carried on the apparatus and in the cars, they stuck when folded and especially when they were sat upon.

We use and like canvas and duck clothing very much. We prefer the type with the removable inter-lining which is removed during the summer. This clothing gives ample protection both against heat and cold and water. It allows more freedom of movement and is less dangerous in working off of and climbing ladders. It also wears better and is less liable to damage than rubber clothing.

Care must be taken not to place canvas and duck clothing that have the rubber inter-lining in them too close to stoves, open fires or radiators to dry as this will damage the rubber.

* * *

The following replies are in answer to a previous discussion on the use of malleable iron couplings.

S. T. Porter, Chief Engineer, Washington, D. C.: Our experience with malleable iron couplings on fire hose is confined to hose furnished as OCD equipment. Including couplings on miscellaneous equipment we have approximately 1,000 such couplings. None of these has had any service other than that attending instruction and drilling of auxiliary firemen.

There is a marked tendency for these couplings to rust wherever the original paint has been worn off and where machined surfaces have been left exposed.

This has not been so serious, however, as to cause any trouble and no preventive measures have been used.

It seems likely that if this equipment were in regular service, continuous attention would be required to insure proper working condition at all times.

J. K. Piercey, Chief, Salt Lake City, Utah: We have about 125 sets of malleable iron couplings now in stock, of which forty sets have been in use for eight months.

We have noted a small amount of rust scale, but find that we can control this by wiping the affected parts with machine oil.

Homer F. Lyles, Chief, Houston, Tex.: We have had 200 pairs of malleable iron couplings in service in this department for a year and a half. We have found that they have to be handled with great care to prevent breaking. Rusting of these couplings has not been serious. We keep them lubricated and clean. We do not use lacquer or paint.

* * *

The following reply is in answer to a previous question of responding to alarms during blackouts.

George Cartwright, Asst. Chief, Fire Warden, State Council of Defense, Harrisburg, Pa.: The Fire Division of the State Council of Defense has set the following rules governing the

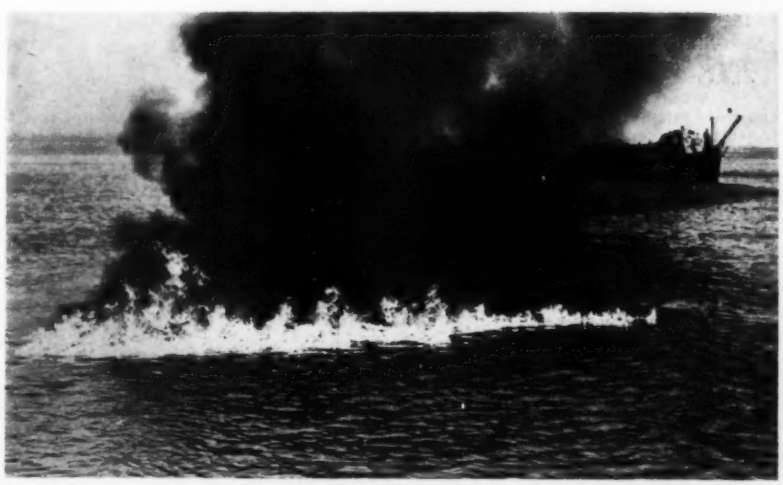
(*Continued on page* 731)

HERE IS THE QUESTION FOR THE NEXT ISSUE

In view of the manpower shortage, should firemen be permitted to work at private employment in defense industries when off duty?

What, in your opinion, are the benefits and disadvantages of such a practice?

If men do defense plant work, should they be entitled to full fire department pension rights if injured while engaged in such work?

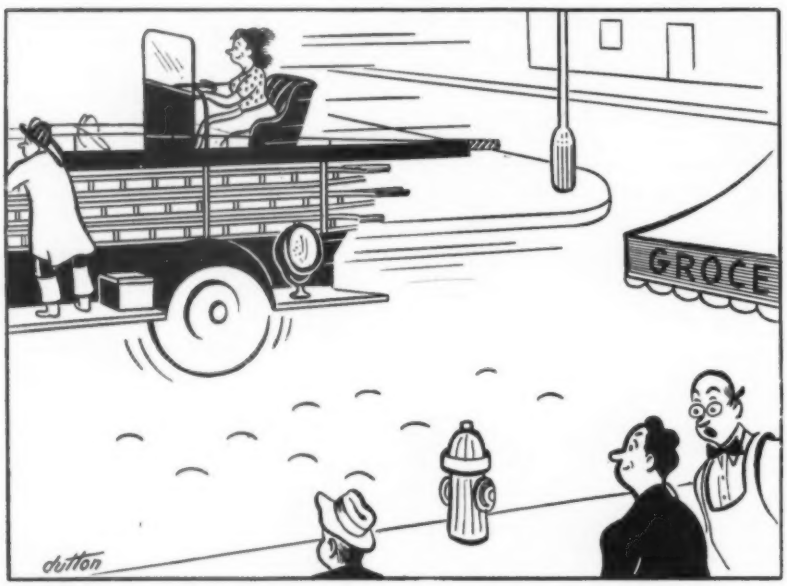


Official U. S. Navy Photo

All That Is Left of a Two-Motored Navy Bomber

Shown above is all that was left on the surface of San Francisco Bay after a two-motored Navy bomber crashed while attempting a landing. The plane was reported on a test flight and was coming in to land when it abruptly dived into the Bay. Five crewmen aboard were presumed to be lost. Note the Navy rescue craft standing by.

FALSE ALARMS



"She's a Natural for That Job—Best Back Seat Driver in Two Counties!"

Excused

Prosecuting Attorney: "You say that when you visited the nudist colony on the night of the murder you didn't do a thing while there. Do you realize that you're UNDER oath?"

Old Guy: "Yes; and do you realize that I'm OVER eighty?"

Bargain Seekers

The farmer's wife was famous for miles around for her sharp tongue, but one day she had to stop nagging. A farm horse kicked her so badly that she had to go to a hospital.

During her absence there was a ceaseless stream of callers at the farm.

The farmer was touched.

"It's very nice of the neighbors, especially the men, to call and ask after the missus," he remarked to the maid-of-all-work.

"Aye, sir," replied the girl, "but most of them want to know if you'll sell the horse."

Preferred to Pay

"Gee!" exclaimed the sick man as the nurse let him sit up for the first time. "I wouldn't let them operate on me again for a million dollars!"

Just then the doctor came along, a worried look on his face.

"I'm sorry," he said to the patient, "but I shall have to open you again."

The convalescent let out a roar.

"Nothing doing," he cried. "I won't stand for it."

"But," argued the doctor, "it's something that just has to be done. You see, a terrible mistake was made. When I sewed you up I left one of my rubber gloves inside you."

The patient was incredulous.

"Is that why you want to open me again?"

"Yes," said the doctor.

The sick man smiled.

"Don't be silly," he said. "Here's a dollar—go out and get yourself another rubber glove."

Fire!

Sentry: "Who goes there?"

Major: "Major Jones."

Sentry: "I can't let you pass without the password, sir."

Major: "Drat it, man, I've forgotten it. You know me well enough."

Sentry: "Must have the password."

Voice from guardhouse: "Don't stand there arguing all night; shoot 'im."

Overtime for Bossie

On going into the cowshed the farmer was surprised to find his new hand, a town girl, giving one of the cows a drink from her milking pail.

"What are ye doin' that for?" he demanded.

"Well," explained the girl, "the milk seemed pretty thin to me, so I thought I'd better put it through the process again."

They Separated

A hillbilly, seeing a motocycle rider going along the road below the house (and never having seen an automobile or motorcycle before), grabbed his rifle and took a shot at it.

His wife called out: "Did you git the varmint, Zeke?"

"No," he said, "I didn't kill it. I can still hear it growling. But I sure made it turn that man loose."

"Too Bad We Didn't Know 'Bout That Single Jacket Stuff Before. That Layout Would Have Saved Our Victory Garden!"

BOOKS

This Year More Than Ever, Make Ideal Xmas Gifts for Fire Fighters

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WHAT'S BURNING

THE following list includes fires of $50,000 loss and over in the United States and Canada, for the month of October, 1943. These figures, compiled from the telegraphic reports, are based on estimates made at the time and are subject to later revision. Taken as a whole, however, they are an approximately correct view of the losses incurred. The figures represent losses in thousands of dollars.

Month Ending October 31	Losses in of Dollars Thousands
Toronto, Ont. — Adler's Furniture Store damaged	80
Parsons, Kans.—Theatre owned by H. J. Griffith Theatres, Inc., damaged	125
Shreveport, La.—Washington Youree Hotel damaged	50
Rockland, Me.—Moffitt Block destroyed	200
Sumter, S. C.—Sumter Cabinet Co. and Sumter Wood Products Co. destroyed	350
Moorpark, Cal.—Warehouse of the S. P. Milling Co. with contents totally destroyed	800
Brunswick, Ga.—The Big Star Super-Market destroyed	50
Chittenango, N. Y. — Presbyterian Church damaged	50
Floyd, Va.—House and granary destroyed.	225
Kingston, Ont.—Store and stock of F. W. Woolworth Co. and stock of adj. Agnew Surass and Maher Shoe stores damaged.	250
Petersburg, Alaska — Alaskan-Glacier Seafood Co. bldg. and contents destroyed	80
Anderson, Ind.—Decker Block housing business bldg., McCrory's Five and Ten Cent store, Haag's drug store, Princess shop and Kresge stores, damaged	300
Penn Yan, N. Y.—Comstock Canning Co. plant damaged	425
Pelham, Ga.—Peanut shelling dept. of the Pelham Oil Fertilizer Co. destroyed	80
Fennville, Mich.—M. Steffin & Co. cider mill destroyed	50
Dalles, Ore.—Diamond Grain Milling Plant destroyed	80
Houston, Tex. — Two boat sheds of the Houston Boat Co. at Kemah destroyed	80
Los Angeles, Cal.—North Hollywood Lumber Co. yards in North Hollywood damaged	50
Ellendale, N. D.—Osborne-McMillan Elevator at Frederick destroyed	50
Albany, N. Y. — Two-story wooden office bldg. and warehouse of Concord Lumber Co., Inc., destroyed	225
Point Edward, N. S.—Half-mile long jetty at new Naval Base destroyed	800
Thetford Mines, Que.—Factory and sawmill of Leonides Dion and several dwellings damaged	60
Indianapolis, Ind.—Large brick bldg. of city sanitation plant destroyed	50
Wellington, Kans.—Hunter Mills damaged	250
Potsdam, N. Y.—Green Mill in Sanfordville destroyed	70
Oklahoma City, Okla.—Warehouse of Nash Finch Co. damaged	60
Wichita, Kans. — Plant of the Economy Laundry & Dry Cleaners damaged	50
Dalton, N. Y.—Five business houses destroyed	60
Portsmouth, Ohio — Warehouse of Braddock Motor Freight Co. damaged	60
Wauseon, Ohio — Wauseon High School bldg. destroyed	60
Lock Haven, Pa.—Warehouse of Clinton Wholesale Co. destroyed	170
Pittsburgh, Pa.—Huge storage and loading warehouse of the F. J. Kress Box Co., destroyed	380
Toronto, Ont.—Factory bldg. housing General Toys, Ltd., Bakers Wholesale Grocery Supplies and Ench Wholesale Leather Co. damaged	50
Los Angeles, Cal.—Aircraft hangar in Van Nuys, and five planes owned by Calif. Aircraft Corp. destroyed.	80
Des Moines, Ia.—Frame bldgs. used by Hargrove Co. as factory destroyed	60
Oweeo, N. Y.—Owego Hotel and J. C. Penney Store damaged	80
Toledo, Ohio — Elevator of the Michigan Bean Co. destroyed	50
Philadelphia, Pa.—Atlantic City Lumber Co. yard damaged	80
Chattanooga, Tenn.—Stock barn in Warner Park destroyed	50
Newport, News, Va. — Wythe Recreation Center destroyed	60
Lac Edouard, Que.—Edouard Sanitorium destroyed	200
Sioux City, Ia.—Plant stock of the Master Refrigerator Locker System, Inc., destroyed	125

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Port Dalhousie, Ont.—Plant of Canadian Canners, Ltd., destroyed..... 60

Little Rock, Ark.—U. S. A. Laundry at Camp Robinson destroyed 300

Los Angeles, Cal.—The K. B. Ranch Market destroyed 80

Burley, Ida.—Jerome Co-operative Creamery Co. plant destroyed 50

Lawrence, N. Y.—Summer home of Rev. Gilbert Darlington destroyed..... 60

Columbus, Ohio—Capital Motor Car Co. damaged and seventy new Hudson automobiles destroyed; bldgs. occupied by F. E. Graves Fence Co. and Plywood Co. also damaged. 80

Franklinton, La.—The Franklinton Wholesale and Retail Store damaged..... 50

Keedysville, Md.—Warenouse and shop of Henry K. Zimmerman and dwellings of Mr. Zimmerman and others damaged.. 50

Joliet, Ill.—The Arthur J. Stevens bldg. housing Pehner & Dillman hardware store, J. & R. Motor Supply Co., Blue Star Auto Supply store, True Value Clothing Co., Hausman Wall Paper and Metropole Hotel damaged 300

Jamaica, N. Y.—Eleven stores and bus terminal used by North Shore Bus Co. and Bee Bus Lines damaged..... 50

Charleston, S. C.—Phoenix Cafe and Night Club, Augustine Steak House, M. Dumas & Co. and American Cafe destroyed.... 80

Faribault, Minn.—Shumway administration hall at Shattuck College damaged..... 125

Terra Alta, W. Va.—Hopemont Tuberculosis Sanatorium's barn destroyed. 50

Rockland, Me.—Two wooden blocks in heart of business district destroyed..... 80

Cordova, Alaska—Gulf Packing Co. destroyed 50

Youngstown, Ohio—Dairy barn on Cranberry Run farm destroyed 50

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Practical Training

(*Continued from page 703*)

stretch, twelve lengths or thereabouts a long stretch, eighteen lengths, or over.

Q. How does an improper layout affect nozzle pressure?

A. Improper layout may cause nozzle pressure to be ineffective. For example, if the department has only 2½-inch hose, and a long stretch is needed, it may not be possible to secure a stream of satisfactory size from the layout. Should a second parallel line be laid, and the two lines siamesed into the nozzle, an effective stream might result.

As an example, if we take the previous example where 800 feet of 2½-inch hose was laid and equipped with 1½-inch nozzle, and added a second parallel line of hose, also 800 feet in length, and then siamese the two lines, we would have a nozzle pressure of 50 pounds with an engine pressure of 163 pounds, or a nozzle pressure of 60 pounds with an engine pressure of 193. Thus by stretching the second line, we are able to secure an effective stream from the 1½-inch nozzle which was impossible in the single line equipped with 1½-inch nozzle.

New Use for Fire Department Pumpers

A new use of fire department pumpers has been demonstrated and can be applied perhaps most advantageously in connection with the national defense program. This consists of using a fire department pumper as a booster pump in the waterworks system, such as in pumping from one dead-end main on one street to a dead-end water main on another street to strengthen the water supply on one of the dead-end pipes.

Furthermore, there are cases where a gridiron may feed a long dead-end pipe which, due to its length, will furnish only a small amount of water at the end hydrant. A fire department pumper connected to a hydrant on the nearest portion of the gridiron and pumping into the nearest hydrant on the dead-end main with the gate valve shut off at the connection of the dead-end main to the gridiron will permit raising the pressures on the dead-end to the point where considerably greater quantities of water will be available at the end hydrant.

In undertakings of this kind where pressures are increased on the water mains perhaps up to 100 or 110 pounds, the matter should be discussed with the waterworks superintendent beforehand and his permission obtained. Generally, the waterworks official will be glad to cooperate in every way with the fire department and undoubtedly will be willing to make an actual test of such a procedure if the fire department will ask him.

While on this subject, it may be well to explain the use of the fire department pumper as a booster pump in the waterworks system in fighting a fire on the outskirts of one of the eastern municipalities. An industrial building approximately 400 or 500 feet from the nearest hydrant was afire. The water supply was from two long 6-inch dead-end pipes one block apart with a hydrant at each end. For some reason these two dead ends had never been cross-connected and so the water available at

either of these hydrants was entirely dependent upon the carrying capacity of each of these dead-end 6-inch pipes.

The fire department had given this particular problem study beforehand and had determined that the water supply at each of these hydrants was limited to approximately 500 gallons per minute for fire pumper service. In their calculations they decided, and their figures indicated that they were correct, that in the event of a fire in this industrial building, if more than 500 gallons per minute were needed as fire streams, they would use their two pumpers of 1,000-gallon and 500-gallon per minute capacity, setting the 1,000-gallon per minute pumper at the nearest hydrant furnishing supply for four 2½-inch hose lines leading to the fire. This pumper, of course, at first would not be able to obtain more than 500 gallons per minute from this hydrant and could furnish only two hose streams. Then, by setting the 500-gallon pumper at the other hydrant a block away on the other dead-end 6-inch pipe and pumping into the hydrant to which the 1,000-gallon pumper was attached, they would be able to furnish another 500 gallons per minute and in this way supply four standard fire streams on the fire.

From a paper read by Sanford Herberg at the Sixteenth Annual Northwest Fire School, St. Paul, Minn., May 17-19, 1943.

California Fire Board Named

Governor Warren of California recently announced appointment of a nineteen-man advisory committee to the State War Council to deal with the fire protection problem and statewide mobilization of firefighting forces in case of a disaster.

Chief Harold P. Bowhay of Bakersfield, chairman of the new committee, which includes members of the former executive committee of the California Fire Disaster Plan, said that the fire fighting resources of the entire state can be pooled behind any area after appeals from local, county and district coordinators.

Members from the Northern section, Chief Hugh F. Morris, vice chairman, San Mateo; Chief Albert J. Sullivan, San Francisco; Russell W. Beeson, U. S. Forest Service, San Francisco; Earl Barron, State Division of Forestry Sacramento; Burnett Sanford, National Park Service, San Francisco; Loren S. Bush, Board of Fire Underwriters, San Francisco; Jay W. Stevens, San Francisco.

BOB GREENOCK

Volunteer Dies While Fighting Fire

A volunteer fireman succumbed to a heart attack while fighting a fire which destroyed a home in the village of Norwood, New York, this summer. The victim, Stewart W. Powell, 35, dropped dead as he started to reenter the building after assisting in carrying out furniture.

Without transportation when the alarm sounded, Powell ran to the fire and had been working for a half hour before he was stricken. Norwood firemen, assisted by volunteers from the nearby village of Norfolk, battled the blaze for four hours.

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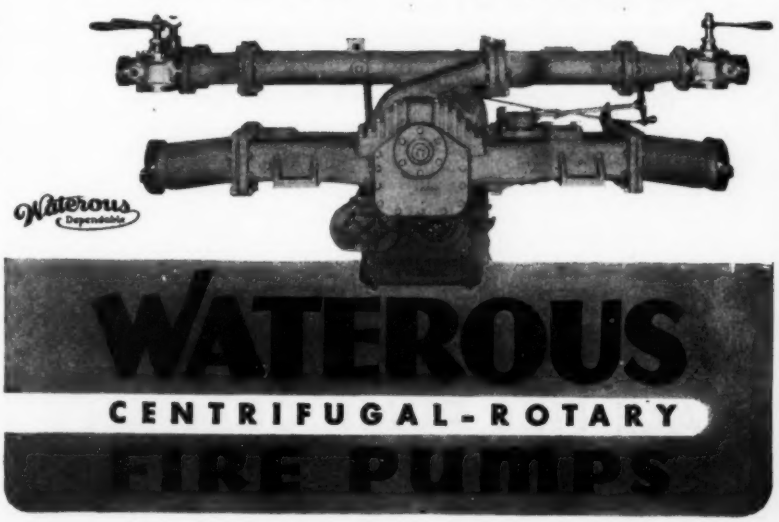

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Six-Alarm Fire Hits Oakland

A six-alarm fire, so hot that old timers in the Oakland Fire Department said they had never seen anything like it, struck one of Oakland's industrial sections early on the afternoon of September 7, leveling a block of warehouses and business houses, causing eight exposure fires and injuring at least a dozen firemen and civilians before it was extinguished.

The fire, of mysterious origin and which started in the same spot where another unexplained blaze occurred four months previously, caused damage estimated conservatively at $250,000 and caused both Federal and city officials to launch investigations

The fire apparently started in a warehouse building formerly occupied by the Refrigerator Sales and Service Company where the earlier fire had caused $/5,000 damage.

The flames spread with what officials termed "amazing rapidity" following an explosion which witnesses said was succeded by a series of lesser blasts. Within seconds it had leaped into the adjoining Wilton Furniture Company's building and shot across E. 12th Street to the three-story J. Catucci building.

First arriving firemen stretched lines toward the building, then a tongue of flame shot out of the old warehouse and not only ignited the Catucci building across the street but actually set the asphalt surface of the street on fire, destroying many lengths of hose.

Fire apparatus was blistered, autos parked nearby were scorched and ruined, a railroad spur track holding several freight cars was destroyed, and a number of neighborhood fires were started.

Chief William Lutkey responded on the first alarm from Box 2436, E. 12th Street and 19th Avenue, at 1:59. Three minutes later he called for a straight fourth alarm and at 2:04 p.m. for a sixth alarm.

The entire block of buildings on the south side of E. 12th Street was destroyed and the Clipper Cafe and Bar, a truck parts company, a mattress sterilizing plant and two other auto accessory houses were damaged in the Catucci building.

What was left from the earlier fire at the refrigerator sales and warehouse building was completely destroyed and the Wilton Company, heavily stocked with furniture, was almost totally destroyed.

Fifteen patrons in the Clipper Bar were all but trapped in the fire which spread to that place because it had no rear entrance. Al Ferreria, owner of the cafe, herded the patrons out of the building and into the flaming, smoking street. Two waitresses suffered slight burns in their rush to safety and one of them was severely cut when the heat cracked a large plate glass window, raining fragments on them.

Two firemen were treated for severe cuts, one a severed artery, and several others were treated for heat and smoke exhaustion. A number of civilians were treated for minor injuries by hospital ambulance crews.

Investigators later said the street fire was caused by exploding cylinders of freon which, they said, becomes extremely volatile when heated. Large quantities of kapok, used in stuffing

overstuffed furniture and mattresses, fed the flames.

Coast Guard fire fighters aided the fourteen engine company and four truck company crews. The Coast Guard sent a fire barge and a fireboat to the foot of 19th Avenue, opposite Government Island, to stand by in case the flames spread that way but they were too far away from the fire to give assistance.

Acting Fire Chief Martin Kearns of the San Francisco department, informed of the fire, ordered the San Francisco fire alarm office to send whatever equipment was requested if Oakland asked for help, and East Bay cities stood ready to cover-in for Oakland companies if a general alarm was sounded.

BOB GREENOCK.

Fire Chiefs of Second Service Command Meet

The first annual conference of military fire chiefs was held at the New York City Fire College in Long Island City, on September 24.

The conference was under the direction of the Repairs and Utilities Branch, Second Service Command, Mr. LeRoy R. Dehlinger, Fire Prevention Engineer, presiding over the meeting as Chairman.

The assembly was made up of all fire chiefs in the Second Service Command; A. H. Gent from the Office of the Chief of Engineers, Washington, D. C.; and representatives of several of the fire equipment manufacturing companies.

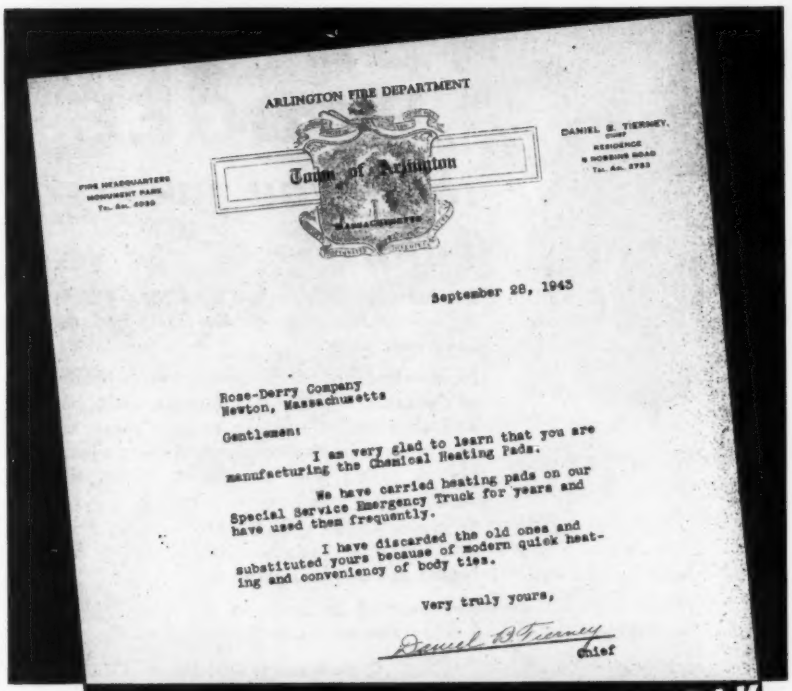
Mr. Dehlinger formally opened the meeting by discussing fire loss per $1,000 valuation. It was noted that Sgt. Kissinger of the U. S. Military Academy of West Point had the claim to the best record, never having had a fire in nineteen years.

The opening address was made by Major H. P. Bosworth, Jr., Fire Prevention Section Chief, R. & U. Br., Second Service Command. Major Bosworth commented on the various functions and operations of the Fire departments assigned to the Engineers Corps, as well as maintenance of fire appliances, apparatus and other fire equipment.

After Major Bosworth's address, the assembled chiefs heard Abel H. Gent, Fire Prevention Engineer of the Office of the Chief Engineer, Washington, D. C. Mr. Gent discussed the entire program of civilian fire departments being associated under the supervision of the Engineers Corps. He also commented on the care and maintenance of fire apparatus, civilian personnel and various matters pertaining to post fire departments.

The Dean of the New York City Fire College, Deputy Chief John T. Waldron, was next called upon by the Chairman. Chief Waldron, pinch-hitting for Commissioner Walsh, officially welcomed the assembly of visiting fire chiefs and went on to speak of the New York Fire Department and its ever-ready willingness to cooperate with the U. S. Army.

Mr. Dehlinger then presented two awards, one a handsomely inscribed plaque to Chief James O. Lee, who has been at the U. S. Army Service Forces Depot in Schenectady, N. Y., for twenty-five years; and the other a fountain pen and overnight carry-all bag to Inspector Barney Colville of the Fire Prevention Section, R. & U. Branch, who has enlisted in the Seabees, U. S. Navy.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Town of Arlington

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September 28, 1943

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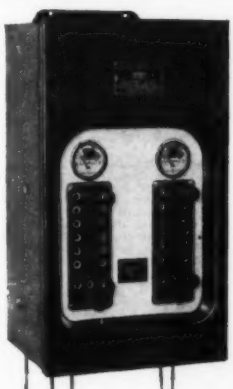

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State of New York }
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Before me, a Notary Public in and for the State and county aforesaid, personally appeared I. H. Case, who, having been duly sworn according to law, deposes and says that he is the business manager of the FIRE ENGINEERING and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Case-Shepperd-Mann Publishing Corp., 24 West 40th Street, New York 18, N. Y.; Editor, Fred Shepperd, 24 West 40th Street, New York 18, N. Y.; Managing Editor, Fred Shepperd, 24 West 40th Street, New York 18, N. Y.; Business Manager, I. H. Case, 24 West 40th Street, New York 18, N. Y.

2. That the owner is: Case-Shepperd-Mann Publishing Corp., 24 West 40th Street, New York 18, N. Y.; I. H. Case, 24 West 40th Street, New York 18, N. Y.; Fred Shepperd, 24 West 40th Street, New York 18, N. Y.; Karl M. Mann, 24 West 40th Street, New York 18, N. Y.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

I. H. CASE,
Business Manager.

Sworn to and subscribed before me this 1st day of October, 1943.

[Seal]

WILLIAM H. TOPHAM,
Notary Public.

(My commission expires March 30, 1945.)

The afternoon session opened with the showing of a motion picture film on the Cardox truck used in fighting airplane crash fires. Following this, a second film was viewed, the purpose of which was to show application of bulk liquid CO_2, stored at low temperature and low pressure, in combating industrial oil fires.

A question and answer session followed.

In order to aid materially in the reduction of loss by fire, Chairman Dehlinger suggested that an education program be carried on by unit commanders, post fire marshal and post fire chiefs at the various posts, and that fire prevention posters be placed in day rooms, recreation halls, gymnasiums, post exchange buildings and other such locations.

Incidentally, the Second Service Command has the lowest fire loss of all service commands in the United States.

Broome County Fire Chiefs Organize

Thirteen fire chiefs from the twenty-five fire departments in Broome County, New York, met recently at Johnson City to form the Broome County Fire Chiefs Association.

Officers were chosen to hold office until the fourth Friday in January, when the election of officers will take place. The constitution and by-laws of the Mid-Hudson and Harlem Valley Fire Chiefs Association was tentatively adopted until the January election.

Fire Chief Ernest Youngs of Port Crane was elected as the tentative President. Chief Youngs is the County Fire Administrator.

Other officers elected were: First Vice-President, Cecil R. Jones, First Assistant Chief, Endwell; Second Vice-President, Chief Henry Leighton of Whitney Point; Third Vice-President, Chief William J. Rickert, Johnson City; Secretary, Chief Edwin Bennett, Windsor; Treasurer, Chief Frank W. Bell, Binghamton State Hospital; Directors, Chief Arthur J. Dillon, Binghamton; Chief James Lyon, U. S. Government Medical Center, Hillcrest; Chief Edward J. Hart, Endicott, and Chief Edward Smith, Deposit.

The meeting made progress with plans for the proposed new county-wide cooperation and mutual aid system through which every company will help every other.

September Fire Loss

Estimated fire losses of ú26,488,000 in September in the United States represents an increase of $6,046,000, or twenty-nine per cent over losses in September, 1942, it was announced recently by the National Board of Fire Underwriters. The September losses were the highest for any corresponding month since September, 1932, when they amounted to $30,972,000. September also was the eighth consecutive month this year to register an increase in losses over the corresponding month of 1942.

Losses in September, however, represented a decrease of nine per cent from losses of $29,193,000 reported in August this year. For the first nine months of this year losses are estimated at $271,211,000, an increase of $39,596,000 over the total of $231,615,000 reported for the first nine months of last year.

WAR FARE

Alarms and Discussions Clipped and Culled from the War News of the Day, of Interest to the Fire Service.

Hot Off the War Ticker

The British are still hunting old Nazi bombs, undetected two years after the 1940 raids. It may be recalled that 100 persons were killed last June when an undetected bomb exploded in South London. . . . We hate to see Chief Arthur Wright leave the New York Fire Department, but we're glad he got his commission as Lieut. Commander in the Navy. . . . United States and Canadian factories are shipping to fighting fronts a new powerful explosive called "RDX" developed in experiments which cost the lives of five scientists, it has been announced. . . . A prison train carrying 300 Nazis was wrecked near Charlottesville (Va.). What a pity—the fireman and engineer were killed, but not a single Nazi perished! . . . A mysterious plane, not of U. S. A. vintage, gave Hawaii area its first big scare since Pearl Harbor. It is believed plane was Japanese on a reconnaissance flight. . . . Tacoma (Wash.) held a contest to determine the best auxiliary fire team. It took three days for the dust to settle! . . . One of the oldest auxiliary fire forces is that of Charles County (Md.), organized shortly after Pearl Harbor. . . . A temporary warehouse of the Willow Run Army Air Base was damaged by fire. . . . Eleven workmen were hurt in a blast at the Ferro-Enamel plant at Birmingham (Ala.) Cause? You guess. . . . It is reported that the Germans are experimenting with a new type of gas on the slopes outside fortifications near Liege in Belguim. . . . For the fourth time in as many months OCD equipment has been loaned to New England communities to take the place of regular apparatus put out of action. When flames swept a firehouse in the Peacedale Section of the town of South Kingstown (R. I.), damaging the apparatus, the Regional office of OCD in Boston promptly placed a 500-gpm pump and full equipment in the town. Previously, three Massachusetts communities had secured the loan of OCD apparatus when regular equipment was destroyed by fire or damaged by mechanical breakdown; they were Royalston, South Deerfield and Sturbridge. . . . That U. S. cargo vessel, which took fire and was sunk in the New York Bay by fireboats and subsequently raised, was towed to sea and given a final, complete burial. It was found impossible to salvage her. . . . The British steamer Loreto caught fire while being loaded with Saltpeter at Iquique Harbor (Chile)—a total loss.

* * *

A Bit of De-Bunking!

In the book, *Covering All Fronts*, by an American journalist, Ralph Ingersoll, occurs this statement:

"Taking shelter during an air raid is compulsory in Moscow. The Russians take their rules very seriously, and even the delegation of professional firemen who flew to Moscow to lend their assistance, were required to retire to the shelters whenever the alarm sounded.

"This was the joke of Moscow when I was there. The poor Englishmen who had been through more air raids than the Rus-

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BUY BONDS EVERY DAY

Winning the battle against fire and smoke, is possible ONLY when firemen are working with efficient equipment, and this is true, particularly of Gas Masks. Countless tests, under many severe fire conditions, have proven the protective qualities of the Acme FULL VISION All-Purpose Type FD Gas Masks to the firemen. Without an efficient Gas Mask, firemen are assuming tremendous risks to themselves.

With sabotage an ever prevalent menace in industrial sections, fire departments must be on the alert at all times. In such fires, firemen may encounter many forms of gases, etc. The Acme FULL VISION All-Purpose Type FD Gas Masks provide protection against Carbon Monoxide, Acid Gases, Organic Vapors, Toxic Smokes, and Fumes. For this All-Purpose Protection, firemen should wear Acme Gas Masks and Canisters.

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Are given preference by so many fire protection and water works men because they know that more than half a century of experience goes into their manufacture and they embody valuable and exclusive features.

Write for the FACTS.

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Try C-D/Fog

SATISFY YOURSELF . . .

C-D/Fog seems to freeze fire with a chilling blanket of carbon dioxide. It is safe and efficient on *all* fires including electrical, oil, gasoline, and chemical.

C-D/Fog leaves no after-fire mess. Carbon dioxide is a vapor, odorless, tasteless, harmless. It is equally effective in hot weather and at sub-zero temperatures.

C-D/Fog is a product of The General Detroit Corp., manufacturers of chemical fire extinguishers and allied apparatus since 1905—producers of S.O.S. Fire Guard, Alaskan, Floafome, and other famous brands. General Detroit's known record in quality mass production is your assurance of prompt delivery for essential requirements.

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Please rush details on *C-D/Fog* and others in your complete line of fire extinguishers.

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Tear out this simplified coupon and attach to your letterhead.

sians could yet imagine, sat night after night, on benches in the subway, missing the show they had come so far to study."

British firemen don't agree with Ingersoll. One of them says:

"What are the facts? First, no delegation of professional or any other kind of firemen was sent from London or from Britain, or from the British Commonwealth of Nations, or from the moon, to assist the Muscovite firefighters and people to fight enemy-made fires. The Home Office did, in an excess of good will toward our, then, new ally, send Lieut.-Colonel Guy Simonds to advise the Moscow Fire Brigade how to fight enemy fires . . . it was found that no need for advice existed; that Colonel Nikolsky, commanding the Moscow Fire Brigade, was found to be remarkably well-informed on all matters pertaining to fire defence, as well as upon the general make-up of the British Fire Service, and its appliances. . . . I like Ingersoll's naivete. First the British delegation has experienced blitz conditions beyond the imagination of the most whimsical of Russians; and, secondly, the same delegation is forced to miss the show which it has come to study. In one breath Ingersoll's phantom British firefighters are there to advise, if not to lead to victory; in the second, they are there to learn."

* * *

Nazi Bombs a Flop?

From London comes the story that the new, much vaunted German "secret weapon" is the rocket bomb fired from Nazi intercepting planes during the American Flying Fortress raid on Regensburg. Furthermore, the bomb, according to reports, is a 'bust.' It is said that the bombs were fired at 25 at a time, at a range of 2,500 yards, mostly without serious effect.

According to our advices, there is nothing new or mysterious about such a weapon, which is a development of a Russian idea. Royal Air Force tried it, but discarded it, preferring ordinary cannon for fighter planes in night or day combat.

* * *

They Have Their Troubles, Too!

Our own ineptness at handling the nation's manpower problem, as related to fire defense, is not so greatly different than that of our British friends. In the September, 1943, issue of "Fire," the "official journal of the British fire service," we read:

"Says the Collector, *journal of the fire force based on Glasgow:*

"Do you realise that the art of driving a horse and lorry is considered more important to the war effort than the job of firefighting? If you don't, then the Ministry of Labor do. At least, their recent transfer of a fireman from the NFS to 'important war industry' resulted in him being given this particular job.

"What makes it more ironic is that the normal occupation of this man is that of seaman. Surely this Gilbertian transfer demands investigation."

* * *

The Blackout Is Deadlier Than the Bomb?

Data from London (Eng.) indicates that nearly twice as many persons were killed in traffic accidents in Britain the first nine months of this year as died from enemy air raids in the same period. Figures released by the Ministries of Home Security and War Transport listed air raid deaths at 2,110 and road deaths at 4,079.

Of course Britain hasn't been receiving the same sort of raids that it faced in 1941-2.

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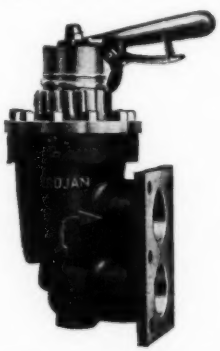
1" to 2½" female threads

MODERN PUMPERS

demand these rugged, modern relief valves. Their simplicity and responsive dependability make them a must. Made in sizes from 1 inch to 2½ inches with capacities up to 1600 g.p.m. and pressures up to 750 lbs. Write for descriptive literature describing the complete line of



TRAILER PUMPERS

Trailer pumpers require valves made especially for this type of work, such a valve is the ROSS Trailer Pump Relief Valve. Made in sizes from 1 inch to 2½ inches with pressure adjustments from 10 lbs. to 750 lbs. and capacities from 0 to 500 g.p.m. at 120 lbs. pressure.

ROSS VALVE MFG. CO
INCORPORATED
P.O. BOX 595, TROY, N.Y.

Fire Marshal Garrity Retires

State Fire Marshal Stephen C. Garrity of Massachusetts retired on November 12 after ten full years of faithful and meritorious service as an honest, hard-working public official.

At the end of his trail as a public servant, Fire Marshal Garrity can look back on ten years of achievement. Since 1933, when he first took office, the fire losses in Massachusetts have maintained an average reduction of $6,000,000 during his incumbency. The fire marshal's record for arrests during his decade of office totals 1,325 with a ninety per cent average for convictions.

Stephen C. Garrity

In Massachusetts the fire marshal has broad powers, including the power to summons witnesses and to hold inquests to determine the cause or circumstances surrounding any fire happening anywhere within the commonwealth. This authority was used by Governor Saltonstall to permit Fire Marshal Garrity to make a comprehensive probe into the cause and circumstances relating to the Cocoanut Grove holocaust.

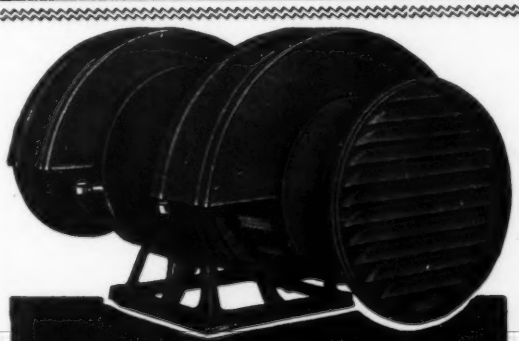
The fire marshal enforces all laws, rules and regulations pertaining to fire prevention. It has always been Marshal Garrity's contention that fire prevention is a matter of good housekeeping with neatness, orderliness and preparedness paying off rich dividends in safety and savings.

His duties also include responsibility for the safety of the storage and use of inflammable fluids and petroleum products. When a suspicion was whispered in Massachusetts that possibly Nazi submarines were being supplied with fuel oil coming from Massachusetts, Marshal Garrity assigned several State detectives, attached to his division, to check the sale of every gallon of oil sold for a period of a year. The rumor was proven false by his factual study.

The storage, manufacture and sale of explosives also comes under the jurisdiction of the fire marshal. Before the war it was of little consequence. But then war needs created regular arsenals within the commonwealth. Some newcomers felt that the war effort required expediency of the sort that overlooks safety. They were soon hauled up short by Marshal Garrity who insisted safety regulations were not to be minimized, but enlarged.

This emblem, which identifies one of the Nation's most complete lines of department supplies, is known and respected wherever fire fighting equipment is used. It is the mark of thoroughly sound design and extremely high quality.

ELKHART BRASS MANUFACTURING CO. Inc.
Elkhart, Indiana



STERLING MODEL "M"
GENERAL ALARM SIREN
You Can Depend On It *ALWAYS*

The Sterling Model "M" Siren, while primarily built for fire alarm signals, is particularly well adapted for the emergency duties attendant on National Defense.

This sturdy public alarm with its shrill, penetrating and distinctive vibrations meets and solves both problems.

Rugged and dependable — it is built to deliver 24-hour service. Its performance has never been equalled by any of the other sirens on the market today!

Write for detailed literature

STERLING SIREN FIRE ALARM CO., Inc.
55 Allen Street Rochester, New York

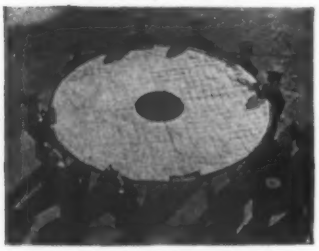
Every Fire Chief and Fireman is proud of the Department's record of achievements

SAVING LIVES
SMALL FIRE LOSS
and many other enviable records

Sure it requires strong brave men to establish and maintain those records and they all know that modern safe equipment is equally necessary.

The first duty "LIFE SAVING" is most important. Failure spoils a good record. Don't take chances. Be prepared. Use the strong, safe ATLAS life net which has 8 exclusive safety features designed for added safety and strength.

Ask for particulars.



ATLAS SAFETY EQUIPMENT COMPANY, INC.
26 Warren St. New York 7, N. Y.

"The Superior"
A MODERN and PROVEN
LIFE NET

The SUPERIOR LIFE SAVING NET is stronger than any other, because of the tested breaking strength of 1,800 lbs. of each individual rope.

The direct pull shock absorber system eliminates all friction and its greater resiliency provides for a safer, easier landing.

Made of Chrome Molybdenum steel, the frame may easily be folded for storage within a few seconds.

For the utmost in LIFE SAVING VALUE . . . "SPECIFY SUPERIOR".

For ECONOMY, have your old net converted into a "SUPERIOR".

Other SUPERIOR Products:
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Ladder Belts
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William Moeller
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SUPERIOR FIRE EQUIPMENT CORP.
235 E. 42nd St. New York, N. Y.

Mr. Garrity became fearful concerning the amount of explosives that were loosely stored in haphazard fashion. He initiated a state-wide survey of methods of granting permits for the storage and handling of explosives by local authorities. He found that dynamite was being sold over the counter like nails, that it was kept in closets and under kitchen sinks and frequently forgotten and left behind by contractors. As a result of this investigation, explosives were required to be stored in guarded magazines that had been examined and tested to insure the maximum safety.

As part of his prevention program Fire Marshal Garrity maintained a policy of holding frequent meetings with the fire chiefs of Massachusetts to hear their views and give his own to them. In cooperation with the State Department of Education, fire prevention lectures were given to firemen and special instruction courses were held at regional schools that were located for the convenience of the fire fighters.

The problem of inadequate water supply was met through the joint efforts of the fire marshal and federal and local authorities by the installation of water hole projects. This was a sound measure of safety in rural communities where there were no hydrants or available water sources.

During the same year, 1935, Marshal Garrity had his men make a thorough investigation and inspection of mental hospitals and feeble-minded schools for the protection of their 25,000 inmates. His recommendations were forwarded to the executive head of the institutions and they were acted upon.

Fire Equipment Catalogued

The emergency with which Massachusetts was faced when it was swept by its first hurricane in 1938 caused Marshal Garrity to make a complete inventory of fire-fighting and rescue equipment. The results were catalogued and indexed so that every community would know what was available in the event extra equipment was needed. On many occasions since that inventory has been invaluable.

Although it seemed that Fire Marshal Garrity's office was functioning at top speed before the war, the post Pearl Harbor days brought many new problems in safety and prevention work. He constantly warned against the dangers of sabotage and stressed that a greater menace lay in carelessness and lack of preparedness. War industries were warned time and again by fire inspectors who visited their plants.

It was climaxed by the roaring blaze that was only brought under control after irreplacable rubber stocks of the Firestone Rubber Company of Fall River had been consumed. The popular cry was "Sabotage!"

Although the effects couldn't have been improved upon by the craftiest spy or saboteur, it wasn't sabotage. With studious care, Fire Marshal Garrity made what amounted to an academic research into the cause of the fire. Every available laboratory aid, both that of the State Police and private sources, was called upon to assist. It was finally decided that the cause was an industrial hazard. Marshal Garrity's voluminous report was the text-book of safety engineers who were amazed by the scope

BOYER

Headquarters for
"DEPENDABLE"
FIRE APPARATUS and FIRE DEPARTMENT SUPPLIES

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FORTIFY FOR FIRE FIGHTING

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BOYER FIRE APPARATUS CO.
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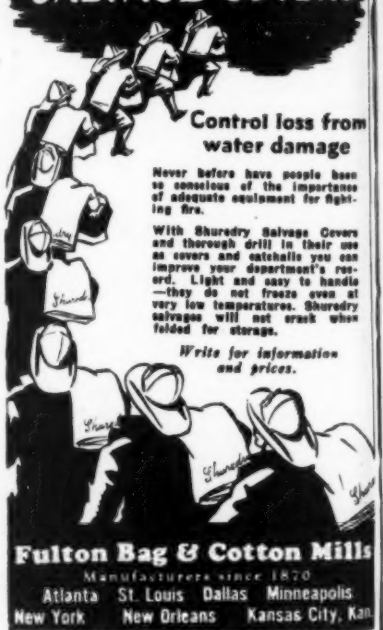

Control loss from water damage

Never before have people been so conscious of the importance of adequate equipment for fighting fire.

With Shuredry Salvage Covers and thorough drill in their use as covers and catchalls you can improve your department's record. Light and easy to handle—they do not freeze even at very low temperatures. Shuredry salvages will not crack when folded for storage.

Write for information and prices.

Fulton Bag & Cotton Mills
Manufacturers since 1870
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of his investigation. The F.B.I. and Army and Navy Intelligence bureaus accepted his findings without reservations. In his report Garrity minced no words about untrained plant firemen, the shutting off of sprinklers and the failure to direct local firemen to the blaze and directing them into a blind alley.

One of his feats of organization was the development of a system of mutual aid between municipalities in cooperation with the fire chiefs of the State. He also helped create a state-wide mobilization plan of all fire departments in the event of a war emergency. His bulletin of instructions on methods of combatting incendiary bombs and explosives was one of the first published. It was printed as an official document of the International Fire Chiefs Association.

Marshal Garrity is a veteran of World War I. He served in France as a member of Ammunition Train No. 415, which means that he was sitting on high explosives at a tender age. He is a former state commander of the American Legion and he has been a member of the national executive committee since 1931. He holds many other important Legion committee posts.

A few days ago when the Massachusetts Fire Chiefs Association voted Steve Garrity an honorary life member of their organization, the fire marshal rose and said, "Thanks a lot, boys, but I would like to refuse the honor. Just let me continue as an active member, like yourselves, and pay my own dues."

Fabrics Rendered Fireproof

Coating fabrics to render them fireproof, waterproof and mildewproof is now done commercially with chlorinated paraffin. This is not a new chemical; it has been known for some time, but until recently no satisfactory commercial process had been discovered by which sufficient quantities could be obtained to put it into general use.

Chlorinated paraffin is made by treating paraffin, a petroleum product, with chlorine. Hydrochloric acid is obtained as a by-product.

The new process produces chlorinated paraffin of stability and good color. It has properties which will make it usable in many commercial fields. It is non-inflammable, has low vapor pressure, and favorable plasticizing qualities.

Chlorinated paraffin does not oxidize or undergo other changes in hardening. In order to use it in the production of fabric and other coatings, and in making plastics and other products, it is compounded with cellulose derivatives, resins or other solid materials.

SCIENCE NEWS LETTER, MAY 22, 1943

Eighty Tons of Coal Consumed by Fire

An unusual fire on the evening of September 13 consumed eighty tons of coal stored in a highway department shed in Denver, Colo. The coal was behind heavy timber walls, which seriously hindered the work of the fire department. Several pieces of road machinery were also damaged in the two alarm fire, which had to be fought by firemen equipped with gas masks, due to the bad smoke conditions caused by the inside storage of the coal.

TIMOTHY G. STILLMAN

Let Us Give Thanks .....

For we have much indeed to be thankful for.

We are thankful for the successes of our armed forces, who are fighting to make this world a better place for all of us.

Thankful for the well-being and prosperity of our nation as a whole.

Thankful for the part that we at Wooster Brass are playing in producing the vital goods so necessary to carry on the war effort.

And thankful for the brightening for the future, when the experience and knowledge we have gained in this struggle will be available to help us better serve our friends in the fire service.

HOSE BRASS GOODS WB LINE THE WOOSTER BRASS Co. WOOSTER, OHIO

THE

WOOSTER BRASS COMPANY

FIRE EQUIPMENT OF DISTINCTION

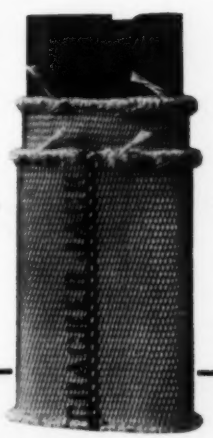
WOOSTER, OHIO J. C. SCHELLIN, PRES.

Thank You, Mr. Jeffers

For Relief in the Rubber Crisis

Thanks for a hard job, well done, as Rubber Director. The American Rubber Manufacturing Company joins its customers in expressing appreciation for this achievement:

—Many industrial rubber products formerly unobtainable, may now be had with little or no delay!



Crackerjack Fire Hose has been the standard on the Pacific Coast since 1905.

The

AMERICAN RUBBER

Manufacturing Co.

Factory and General Offices:

Park Avenue and Watts Street Oakland 8, California

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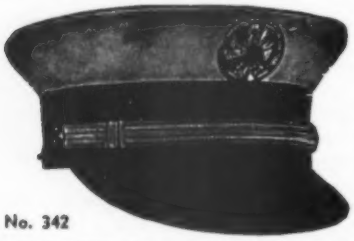
FIREMAN'S UNIFORM CAPS
UNION MADE PROMPT DELIVERY



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Wentworth Fireman Caps are made of the Highest Quality Standard Materials available and by the Best Skilled Union Craftsmen in all the New and Standard styles. Our 47 years of experience and skilled workmen guarantee you AMERICA'S GREATEST CAP VALUE in all WENTWORTH FIREMAN CAPS.

No. 441

Write direct for latest circular and prices or see your local dealer.

WENTWORTH-FORMAN CO., INC.
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Manufacturers
Fireman Cap Specialists for Over 47 Years

"ALL AMERICAN CHOICE"
INVINCIBLE NOZZLES
PREPARE — PROTECT

Portable equipment is the watchword of today.

Buy—

INVINCIBLE NOZZLES

and enjoy the benefits derived by experience of the pioneers in the nozzle field.

Fig. 403

F. N. McINTIRE BRASS WORKS
Successors to A. J. Morse & Son, Inc.
BOSTON, MASS.
1837 - - 1941

Correspondence

Dummy Window for Training Firemen

To the Editor:

The dummy window shown in the photographs herewith is the exact width of the windows in our drill tower. The width of the sill and its height from the floor of the tower on the inside is duplicated in the dummy. The sill on the dummy projects over the wall the same distance as do those on the tower, making it necessary that the ladders be turned properly when lifting them to the imaginary window above. The window framing is collapsible. This is accomplished by the use of pull-pin hinges which can be seen in the photographs.

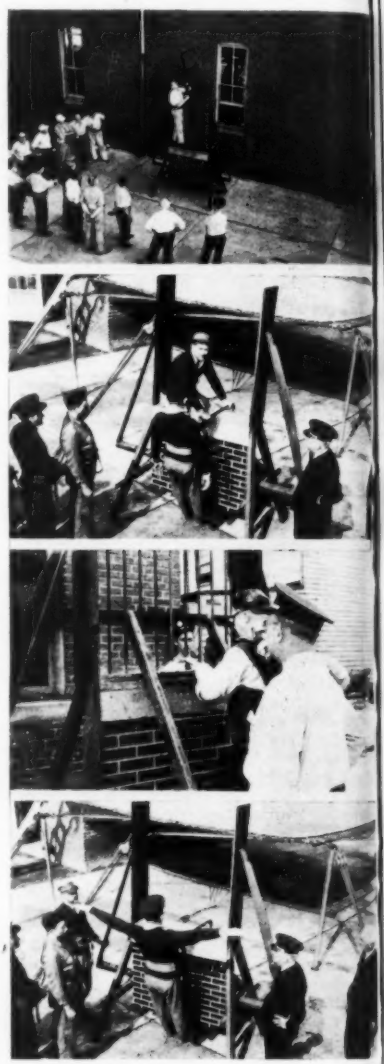
At the bottom of the wall on the dummy, a little to the right of center, an oval strap iron ring must be provided. The butt of the short pompier ladder is inserted through the ring, preventing the bottom of the ladder from swaying out of place when the men enter the window or throw to either side of the ladder for any reason. It is used in conjunction with the upper part of an old pompier ladder, containing the hook, gooseneck, the top three rungs and two shields.

In training, the class can observe better both from inside as well as out, just what goes on. It saves wear and tear on the safety net, caused by a class of fifteen to sixteen firemen erecting the net, entering and leaving the same repeatedly. The net need not be erected until they have mastered the basic evolutions used in pompier ladder work.

We use it to show the men how to sit in, stand in, kneel in, enter and leave the window from the ladder; how to pass a ladder to the floor above from various positions with one and two men; how to hook and unhook from the ladder with life belts and all other evolutions connected with a pompier ladder and a window.

The dummy is used to train the class in the proper manner of wrapping the life line in the hook of a life belt for sliding same. The life line is fastened in one of the upper stories of the drill tower and passes in front of the dummy window. The dummy is used to demonstrate how hose lines are secured over window sills by means of hose straps, the life line, dog chains, etc. It is also used for the same purpose with ladders, using a section from the top of an old ladder. Hose hoists are demonstrated; in fact, any evolution in which it is practical to use a window can be taught with the dummy right where errors can be quickly corrected.

In one of the photographs the window is shown fitted with steel bars. The trainee has taken a leg-lock on the short piece of ladder, adjusted his goggles, lit his torch and gone to work cutting the bars. The cutting outfit is on his back exactly as it would be in forcible entry work. However, two large tanks of gas are used in training rather than those furnished with the portable outfit for reasons that are obvious. The steel bars are about six feet long and are run through loose fitting holes in a 2x4 piece of wood placed across the top of the window frame. They rest in matched holes in another 2x4 resting on the sill. A collar and wing-nut on the bars being cut prevent them from falling down on the sill. The bottom piece of the bar being cut is removed by means of a pair of pliers and dropped in a bucket of water placed there for the purpose. The upper part is cooled, the wing nut and collar moved up, the bar replaced and we are ready for the next main.



Various Uses to Which the Dummy Window Can Be Put

I believe the dummy window has possibilities in departments which do not have drill towers.

Very truly yours,
CARRINGTON R. CORNICK, Captain,
Richmond, Va., Fire Department

Facts on the Harold Lloyd Fire

To the Editor:

It was with much surprise I read in the September issue of FIRE ENGINEERING on Page 578 under "The Watch Desk" and on Page 586 under "What's Burning," your account of the Harold Lloyd fire in my city. Your report of "What's Burning" shows Beverly Hills with the largest fire loss in North America for the month of August shown at

(*Continued on page* 730)

QUICK

The First **FIRST-AID IN THE TREATMENT OF**

BURNS

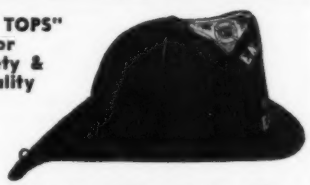
The quicker a burn is treated after occurrence, the less probability of blister formation and complications. Remember, the first five minutes are often the most important in the surface treatment of burns. That's why Gebauer's Tannic Spray should be conveniently available at all times. A stable, antiseptic tannic acid solution, ready for instant use. Simply "press the lever" on the dispenseal bottle and direct cooling, soothing spray over burns. Evaporate rapidly, leaving protective tannic film. Available wherever first aid materials are sold. Write for literature.

THE GEBAUER CHEMICAL CO.
Cleveland, 4, Ohio

Gebauer's

TANNIC SPRAY

"THE TOPS" for Safety & Quality



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WINTER EQUIPMENT

Let us outfit you, from head to foot. Secure the advantages of buying ALL you need from ONE source, with the guarantee of satisfaction of America's oldest firm of firemen's outfitters.

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Helmets, with Cushion Lining and Winter Earlaps
Warm Turnout Coats and Trousers
Rubber-Covered Cotton Gloves and Mittens
Rubber Coats Rubber Boots
Face Shields
LOOSE-LEAF FIRE RECORD BOOKS
DEPARTMENT RECORD FORMS

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Write for Circulars

CAIRNS & BROTHER

Outfitters to Firemen Since 1836
444 LAFAYETTE STREET - NEW YORK

Manufacturers' Announcements

F. H. Pinkerton Public Relations Director of Reeves Sound Laboratories

L. D. Ely, President of Reeves Sound Laboratories, Inc. (Hudson - American Corporation) announces the appointment of Fred H. Pinkerton as Director of Public Relations.

Mr. Pinkerton was formerly Manager of Sales Promotion and Advertising of the Industrial Division of United States Rubber Company.

Coincidentally he is serving as Public Relations Counsel to the National Electrical Wholesalers Association. Also, he has just completed designing and writing the industry book entitled, "Electrified Production," for the National Electrical Contractors Association, Washington, D. C.

He was formerly President of the Industrial Marketers of New Jersey and in 1942, General Conference Chairman of the National Industrial Advertisers Association.

Assistant Chief Beadle in Service

Assistant Chief Edward A. Beadle of the Union City, N. J., Fire Department, is now a sergeant in the Air Corps and holds the title of Assistant Fire Marshal at Benjamin Field, Tampa, Fla. He is in charge of fire prevention and drilling teams of soldiers, who have other duties on the Post, in what to do in case of fire.

He enlisted in the Army as a buck private on November 13, 1942, at which time he was riding in charge of the first platoon of the Union City Fire Department, with the acting rank of deputy chief. His permanent rank was captain. While he was home on furlough in June, the Commissioner of Public Safety swore him in as assistant chief.

Deputy Chief Dies in Air Raid Call

Deputy Fire Chief Harry B. Scheve, a member of the Baltimore, Md., Fire Department for twenty-four years, was stricken fatally on August 27 on his way to his post in response to the air raid alert.

Deputy Chief Scheve has headed the auxiliary firemen's division of the civilian defense organization since 1942.

Appointed to the department in 1919, Chief Scheve was promoted to the rank of lieutenant in 1926; to captain in 1929; to battalion chief in 1932 and to deputy chief in 1942. He had served with the firemen's school and been a leader in the department for many years.

Paper Sent to Servicemen

The members of Highland Hose Company No. 5 of Nyack, N. Y., are performing a unique service for those of the company who have gone into the armed forces, in the form of a little paper entitled "At Ease" and published every two months.

In it are published letters from the men in the service and also news items from the home front. Printing is done by one of the members who is a printer.

Our armed forces in this global war know the value of Fyr-Fyter protection. On the home front fire departments rely on Fyr-Fyter protection to save priceless lives and property. War plants now more than ever must have the best fire protection at their fingertips for instant use.

Stop taking chances. If you need essential equipment, write us today. We are prepared to advise and serve fire departments and war production plants immediately. Get the facts regarding Fyr-Fyter equipment for your protection. Write today.

THE FYR-FYTER CO.

Dept. 101
Dayton 1, Ohio

ARMY (E) NAVY

FYR-FYTER

THE *New* WHEAT *Rechargeable Spotlight*

MODEL 158

2500 FOOT BEAM
25000 CANDLE POWER
1000 HOURS OPERATION

Critical Materials Reduced to a Minimum to insure Availability

FEATURES

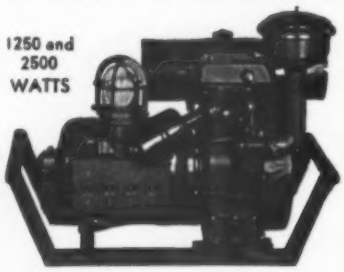
★ Positive "non-spill" Construction
★ Less expensive Operation than dry cells
★ Free use of Hands. Light carries conveniently on Shoulder Strap
★ Weighs only 92 ozs. complete
★ Simple to Charge and Water No need to take Lamp apart
★ Light can be Focused and Directed as Desired

WRITE FOR COMPLETE DETAILS

KOEHLER MANUFACTURING COMPANY, INC.
MARLBORO, MASSACHUSETTS, U. S. A.

"U.S."
PORTABLE
LIGHT PLANTS

1250 and 2500 WATTS



This 1250 watt, portable unit has been designed expressly for fire department use. It is small, light, compact and equipped with carriers for easy portability out on the job. Air-cooled 4-cycle engine 2⅞" bore x 2⅞" stroke. 2.4 H.P. 2 gallon fuel tank. Quick starting. Also 2500 watt size.

LARGER SIZES AVAILABLE

Write for Catalog.

UNITED STATES MOTORS CORP.
430 Nebraska Street, Oshkosh, Wis.

QUAKER QUALITY
REG. U. S. PAT. OFF.

FIRE HOSE
is Always Ready

CHEMICAL
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Western Territory
QUAKER PACIFIC RUBBER COMPANY
SAN FRANCISCO • LOS ANGELES

Correspondence

(*Continued from page 728*)

$1,700,000.00. Under the "Watch Desk" article you show a loss of $2,000,000.00, seven firemen and an employee of the property overcome by chlorine gas and "Mildred Davis Lloyd, his wife, reached his side just as he collapsed at the door of the film vault and dragged him to safety."

The facts regarding the fire are as follows:

The fire loss was $1,000.00.

No film of value was lost. All of Mr. Lloyd's films of value at the time of the fire were stored in vaults at the Paramount Studio lot in Hollywood.

Mr. Lloyd did not collapse at the vault door. In fact, he did not enter the building until after the fire was extinguished, then only for observation.

Mrs. Lloyd came in, for the first time, to look over the place two hours after the fire was extinguished.

No fireman or employee was overcome by gas. All firemen at the fire were exposed to chlorine and film gas and some were treated later in the day as a matter of precaution.

Respectfully submitted,
LLOYD B. CANFIELD, Chief
Beverly Hills, Calif.

Fire Prevention Activities of Boston Fire Department

To the Editor:

I thought you might be interested in the photograph included herein. It shows that, while we had to discontinue our annual fire prevention parade in order to conserve gasoline and tires, we were still able to get crowds by means of public exhibitions at various street intersections throughout the downtown area.

The photo gives you an idea of the way we get crowds together, during which time we deliver fire prevention messages over a loud speaker.

The girl carried down the ladder was an employee of Filene's and she was unknown to the fireman before the carry. How well he knew her afterwards is none of our business.

Similar shows were held on Boston Common, at the Chamber of Commerce Building and in Newspaper Row.

Meanwhile, our officers supervised fire drills in large department stores, public buildings and institutions, defense plants and factories.

All local radio stations carried broadcasts during the day and evening hours including "spot" announcements and special features to back up the campaign.

With the war news, not much newspaper space in comparison with other years was obtained, but we got our message across just the same.

Cordially yours,
WILLIAM ARTHUR REILLY,
Fire Commissioner, Boston, Mass.

Flames Destroy Peanut Works

Approximately 50,000 pounds of sugar and more than 500,000 pounds of peanuts were destroyed on September 8 when a five alarm fire swept through the plant of the Crescent Nut and Chocolate Company in Philadelphia, Pa.

The flames spread to an adjoining structure occupied by the Alexander Sheppard Coffee Company, and water used in fire extinguisher operations damaged $125,000 worth of coffee.

Total damage to the Crescent plant which manufactures peanut butter for the armed forces, was estimated at $175,000 to $200,000, including $50,000 worth of machinery.

At the height of the blaze, the central section of the roof on the Crescent plant collapsed and a section of the south wall caved in.

Debris, falling across narrow Black Horse Alley, ripped a hole eight by twenty feet in the wall of William Epworth and Sons. Members of the Fire Insurance Patrol covered and saved thousands of dollars worth of wool in the plant.

Sparks and embers endangered other buildings in the neighborhood.

Fire Prevention Demonstration Held in Downtown Boston

VALVES
HYDRANTS
AND WATERWORKS ACCESSORIES

M & H products, including pipe line accessories, are well known for high quality of material and expert workmanship. They are made according to standard specifications and have been used for many years throughout the country. Write for Catalog No. 34.

M&H VALVE
AND FITTINGS COMPANY
ANNISTON, ALABAMA

JANESVILLE QUALITY
TURN OUT CLOTHING
Still Available

Our turnout suits are giving excellent satisfaction in most of the large fire departments throughout the U. S. and
THERE MUST BE A REASON WHY SO MANY FIREMEN INSIST ON JANESVILLE QUALITY
Rubber and Duck Coats and Bunkers, Boots, etc.
JANESVILLE APPAREL CO.
JANESVILLE, WIS.

The Round Table

(*Continued from page* 713)

movement of fire apparatus during simulated raids and blackouts:

All fire stations are to be manned on the blue signal. This does not tie up telephone lines.

If the fire is of real origin, fire apparatus responds on the high beam of the light bracket. If simulated, then blackout regulations are the order.

No municipal or individual fire apparatus shall respond to simulated incidents. OCD allocated fire apparatus and auxiliary firemen respond to staged incidents.

The use of oscillating lights, flashing red lights, and bells are the order, but if the apparatus is not equipped with a bell then the siren can be used with caution only at intersections.

Although the Fire Division has never recommended a speed limit, I do believe that it would aid in cutting the accident percentage tremendously. It is better to lose a minute or two in traveling to a fire than to use speed and have possible wrecks and lose the use of that piece of equipment, when it is of the most value.

I believe a speed limit of twenty-five miles an hour should be the order. I also believe the use of headlights on the high beam are of value to the driver of fire apparatus but they should be extinguished upon arrival at the scene of the fire.

In a great many cases, all the fire apparatus is housed in one building. I believe the fire chief should see that his officers are instructed by written order to deploy to various locations that are of strategic value all but one piece of apparatus from the central station. In case of a direct hit only one piece of apparatus would be lost, but if all the apparatus is allowed to remain on the apparatus floor of the station, it will all be lost.

I believe at this time it would be a good suggestion to keep the hood on every piece of apparatus locked where there is not ample protection afforded to guard against sabotage, in the community where there is not a paid person on duty at all times.

I also believe that it is of great value to allow no one on the apparatus floor but bona fide firemen who have been certified as members of the fire department or company. This would go a long way to protect the fire equipment of a community. We must bear in mind that replacements of parts for fire equipment are hard to obtain at this time.

Canning Plant Gutted by Fire

Fire originating from an unknown cause, destroyed the main section of the large canning plant owned and operated by the Canadian Canners, in Port Dalhousie, Ont.

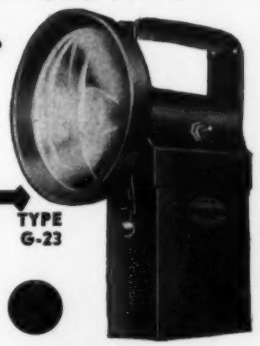
Ten employees were working in the building and had to make their escape from the building from the basement as the fire cut off the exist from the stairways and the fire escapes. The plant was operated for the bottling of tomato juice.

When the Port Dalhousie Fire Department responded, they found the building a mass of flames. Assistance was sent from St. Catherines. Firemen used four lines on the blaze all night and most of the next day.

JOHN KARL LEE

Do as thousands of fire-fighters — Wear H. S. COVER'S famous Nod & Shake
FOG-PROOF GOGGLES
Not just ordinary gas-tight, smoke-proof goggles! Water placed inside lense keeps fog off indefinitely!
SAMPLE $1.65
H. S. COVER, 68 Chippewa St., South Bend, Ind.

One of 70



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- LIGHTEST IN WEIGHT
- MOST LIGHT
- LONGEST BURNING HOURS
- ALL NIGHT WATCHMEN'S FILAMENT
- 25,000 C. P. EMERGENCY FIREMEN'S FILAMENT
- SLIP SPARE BATTERY IN PLACE IN 10 SECONDS

70 "MASTER-LIGHTS"— ONE FOR EVERY NEED

CARPENTER MFG. CO.
"Master ★ Light ★ Makers"
200 Sidney St.
Cambridge, Mass.

Warm-ups FOR "FROZEN" MOTORS AND MEN

In bleak and frigid Northlands, air crews use unit heaters, powered by gasoline engines; to pre-heat motors, and other vital units of the plane — to prevent damage, and speed-up preparations for the take-off. One more front-line duty for the hundreds of thousands of dependable, instant-starting Briggs & Stratton 4-cycle engines serving our armed forces in hundreds of special and standard applications.

THE war's unprecedented demands have given us the opportunity to successfully meet a double challenge. ONE — to set new all-time records for production. TWO—to constantly maintain, even under wartime stresses, Briggs & Stratton high standards of quality, rugged dependability, precision manufacture and economical performance.

Thus we are better prepared than ever—to help on your present war needs or your postwar planning—and to keep up the Briggs & Stratton tradition as builders of "the world's finest air-cooled gasoline engines."

"It's powered right — when it's powered by Briggs & Stratton."

BRIGGS & STRATTON CORPORATION
MILWAUKEE 1, WISCONSIN, U. S. A.

BACK THE ATTACK
BUY WAR BONDS

4 CYCLE
BRIGGS & STRATTON
GASOLINE ENGINES

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FIRE ENGINEERING

NOVEMBER, 1943

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NEW FWD IN SERVICE AT ANCHORAGE, ALASKA

FWD model KHS, 500 gallon pumper recently purchased by Anchorage, Alaska. Equipment includes 300 gallon booster tank; Foamite generator; 30 ft. 3 section ladder, 14 ft. roof ladder; two 10 ft. lengths 4 inch suction hose; 2½ gallon foam extinguisher; all steel hose body.

FWD 500 GALLON PUMPER PROVIDES VITAL FIRE PROTECTION IN FAR NORTHERN PORT

Anchorage, Alaska — far distant outpost of Uncle Sam and a vital defense area — has recently put in service the FWD 500 gallon pumper shown above.

This city requires more than usually dependable fire protection because its dwellings and other structures are of wood-frame construction; a small unchecked fire could quickly spread and result in a major disaster.

In the "States" or its possessions fire-fighting authorities recognize the added merits of FWD apparatus and its many advantages of four-wheel-drive power and performance in getting to fires—faster—safer—under all conditions of road and weather.

FWD builds a complete line of fire trucks in all types and sizes; write for full information.

THE FOUR WHEEL DRIVE AUTO CO. • Clintonville, Wisconsin

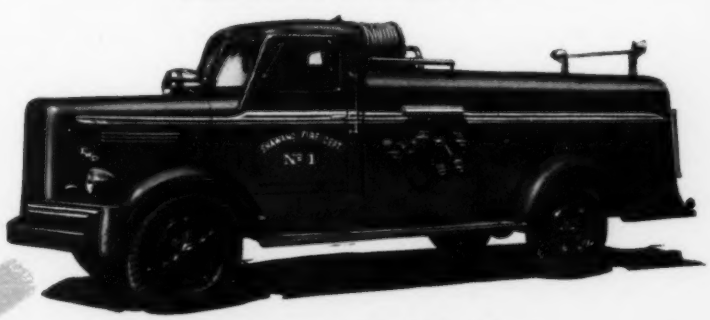
***Canadian Factory:* KITCHENER, ONT.**

FWD TRUCKS

FOUR WHEEL DRIVE

FIRE APPARATUS

Built By the Oldest and Largest Four Wheel Drive Truck Manufacturer



FWD model KHR recently purchased by City of Shawano, Wisconsin. Equipped with 750 gallon per minute, 2-stage centrifugal model CD Waterous pumping apparatus; 100 gallon booster tank, safety glass cab.

FIRES! in inaccessible places are quickly and safely handled with FOGNOZL

FOGNOZL—THE METHOD OF TOMORROW

Fires that are difficult to reach may now be extinguished under the protection of a fog screen.

Attic fires, basements, vaults, prison cells, engine rooms on land and sea, holds of ships, airplane cock-pits, mines, storage rooms, spray booths, kettles containing flammable liquids, and many other confined fires are quickly controlled with ALL-PURPOSE FOGNOZLS.

In the above photographs a fire was caused in an underground conduit by heated electric wires. This took place in a large Pacific Coast city. Few fires are so inaccessible and this type of fire develops the heat of an incinerator.

To attempt to extinguish this fire with a straight stream would mean almost flooding the whole neighborhood conduits. With this ALL-PURPOSE FOGNOZL this fire was extinguished in a few seconds and the water damage was reduced to the point where it was of no consideration at all.

Note in the photographs the old straight stream nozzle discarded and forgotten.

● **FOGNOZL FACTS**—PREPARE BY ACCUMULATING DATA ON THIS NEW WATER FOGNOZL FIRE-FIGHTING METHOD THAT HAS REVOLUTIONIZED OLD METHODS. FOGNOZL ACCOMPLISHMENTS ARE DAILY EMPHASIZED BY OUR ARMED FORCES
● A BROCHURE OF **FOGNOZL FACTS** WILL BE SENT, WITHOUT OBLIGATION, TO THOSE ENGINEERS OR EXECUTIVES WHO WILL SO REQUEST IT ON THEIR OFFICIAL OR DEPARTMENT LETTERHEAD.
IN FOLDER CONVENIENT FOR YOUR FILE

- PROTECTION TO PERSONNEL
  TO FIREMEN AND FIRE VICTIMS
- RAPID EXTINGUISHMENT
  A MATTER OF SECONDS
- REDUCED WATER DAMAGE
  A RATIO OF 1 TO 30
- ECONOMY & AVAILABLE SUPPLY
  PLAIN WATER

GRISWOLD ORIGINAL WATER FOGNOZL

A PRIZE FOR THE BEST

A prize is hereby offered for the best "still" photographs showing the sequences of extinguishing fires occurring in the United States and Canada, with any of our FOGNOZLS, old style or new. The photographs in this advertisement are a sample. We reserve the right to use any or all photographs for advertising purposes and any sent in are sent to us with this understanding. The only compensation is the prize to the best pictures. The prize? Why a FOGNOZL, of course.

FOG NOZZLE COMPANY

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